

ISBN: 978-605-80128-5-1



IV. ULUSLARARASI TARIM KONGRESİ
4th INTERNATIONAL AGRICULTURE CONGRESS

ABSTRACT BOOK

16-17 December 2021

Editors
Dr. Emrah GÜLER
Dr. Tuba BAK

www.azimder.org.tr

<http://utak2021.com>

Organization Committe

Prof. Dr. Turan KARADENİZ

Prof. Dr. Valerian BALAN

Prof. Dr. Taran NICOLAE

Assoc. Prof. Dr. Serghei CARA

Assit. Prof. Dr. Tuba BAK

Dr. Emrah GÜLER

MSc. Levent KIRCA

MSc. Muharrem ARSLAN

Scientific Comitte

Prof. Dr. Kourush VAHDATİ (Iran)

Prof. Dr. Valerian BALAN (Moldova)

Prof. Dr. Safder BAYAZİT (Turkey)

Prof. Dr. Kazım MAVİ (Turkey)

Prof. Dr. Yavuz GÜRBÜZ (Turkey)

Prof. Dr. Fatih KILLI (Turkey)

Prof. Dr. Anita SOLAR (Slovenia)

Prof. Dr. Shawn MEHLENBACHER (USA)

Prof. Dr. Patrik BURG (Czech Republic)

Prof. Dr. Dusan ZIVKOVIĆ (Serbia)

Prof. Dr. Ionela DOBRİN (Romania)

Prof. Dr. Maria Luisa BADENES (Spain)

Prof. Dr. Anar HATAMOV (Azerbaijan)

Prof. Dr. Cafer GENÇOĞLAN (Turkey)

Prof. Dr. Nicolae TARAN (Modlova)

Prof. Dr. Zeynel DALKILIÇ (Turkey)

Prof. Dr. Fazıl ŞEN (Turkey)

Prof. Dr. Koray ÖZRENK (Turkey)

Prof. Dr. Merce Rovira (Spain)

Assoc. Prof. Dr. Igor IANAK (Moldova)

Assoc. Prof. Dr. Nezhik OKUR (Turkey)

Assoc. Prof. Dr. Sergei CARA (Moldova)

Assoc. Prof. Dr. Faheem Shehzad BALOCH (Turkey)

Dr. Azhar Hussain NAQVI (Pakistan)



IV. International Agriculture Congress's (UTAK2021) Program

Online

The program has been prepared according to Türkiye's local time (GMT+3).

- **10:00-11:00 Opening Statements**
- **Prof. Dr. Turan KARADENİZ** (Congress Chairman, Türkiye)
- **Prof. Dr. Seyit Mehmet ŞEN** (UAZİMDER's Honorary president, Türkiye)
- **Assoc. Prof. Dr. Elena SCRIPNIC** (By proxy to the Rector of State Agrarian University of Moldova, Moldova)
- **Assoc. Prof. Dr. Sergei Zaharia** (Rector of Comrat State University, Moldova)
- **Victoria Adajuc** (Scientific Secretary of Institute Practical Scientific Institute of Horticulture and Food Technology, Moldova)
- **Dr. Olga Karastan** (On behalf of the Directory of NAAS, Ukraine)

16 December 2021 - Thursday

11:00-12:30 First Session (Chairman Prof. Dr. Fatih KILLI, co-Chairman Assoc. Prof. Dr. Sergei CARA)

- **Farklı Derim Zamanlarının 'Jiro' Trabzon Hurmasının Raf Ömrüne Etkileri ve Trabzon Hurmalarının Soğukta Muhafazası**
Ahmet Erhan Özdemir, Halil Boran, Soner Baş
- **Bazı Yabancı Ceviz Çeşitlerinin Orta Anadolu Ekolojisindeki Verim ve Meyve Özellikleri**
Safder Bayazıt, Derya Kılıç, Oğuzhan Çalışkan
- **Şalak Kayısı Klonlarında Fidan Gelişiminin Belirlenmesi**

Berna Doğru Çokran, Turan Karadeniz

- **Göynük Armut Çeşidinin Agromorfolojik Özelliklerinin Belirlenmesi**
Turan Karadeniz, Tuba Bak, Emrah Güler, Haydar Kurt
- **Kartalkaya Dağında Seçilen Bir Kuşburnu Genotipinin Agromorfolojik Özellikleri**
Turan Karadeniz, Berna Doğru Çokran, Tuba Bak, Emrah Güler
- **Variation in Total Phenolic and Antioxidant Properties of Selected Medicinal Plants of Lamiaceae Family**
Gülsüm Yıldız, Mahmut Çamlıca
- **Germination and Seedling Growth of Basil: Salinity-Boron Interactions**
Mahmut Çamlıca, Gülsüm Yıldız, Emreca Aycebin
- **Asmada Dormant Dönemde Alınan Gözlerin Meristem Kültürü Çalışmalarında Kullanılma Olanaklarının Araştırılması**
Serhan Karakaş, Özlem Çalkan Sağlam, Hayri Sağlam

12:30-13:30 Lunch

13:30-14:20 Second Session (Chairman Assoc. Prof. Dr. Andrii SHTIRBU, co-Chairman Assoc. Prof. Dr. Igor IANAK)

- **Effects Of Application of Gibberellin on Table Grapes**
Andrii Shtirbu, Natalia Sivak
- **The Impact of Climate Change on Microclimatic Conditions of Territories with Heterogeneous Underlying Surface in Relation to Vine**
Lyashenko Galyna, Buzovska Maryna, Lyashenko Vitalii, Bulaieva Iuliia, Melnyk Ella, Suzdalova Vira, Popova Hanna
- **Monitoring Grape Berry Moth (*Lobesia Botrana* Schiff.) in Commercial Vineyards of Ukraine**
Yu Klechkovskiy, Katerina Shmatkovskaya
- **Main Directions of The Grape Breeding Process in The NSC «V.Ye. Tairov Institute of Viticulture and Winemaking**
Kovaleva I.A., Gerus L.V., Fedorenko M.G., Salii O.V., Skrypnyk V.V., Papina O.S. Dzhumanazarova S.P., Burhelia N.Ye.
- **Evaluation of the resistance of maize (*Zea mays* L.) lines and varieties to *Striga hermonthica* (Del.) Benth**
Kiendrebeogo Ali, Sanou Adama

14:20-14:30 Coffee Break

14:30-15:40 Third Session (Chairman Prof. Dr. Kazım MAVİ, co-Chairman Sergei CARA)

- **Results Of Production Tests of New Mycotoxins Adsorbents by The Method Of Mathematical Experiment Planning In Postnatal Ontogenesis Of Broiler Chickens**
Kapitonova Elena
- **Study of Various Forms of Management of Grape Bushes on A Modernized Trellis of The Pinot Blanc R7 Variety**
Botnarenko A., Rapcha M., Antoch A., Kornya V., Kravets N.
- **Obtaining nano-sized complexes of juglone inclusion with cyclodextrins as potential plant protection agents**
Natalia Sucman, Timur Andrusenco, Fliur Macaev
- **The Activity of a Mixture of Chitosan, Glycosides and Salicylic Acid Against Plant Diseases**
Natalia Sucman, Serghei Pogrebnoi, Fliur Macaev
- **Gooseberry Varieties Productivity and Duration of Exploitation Period of Plantations In The Republic of Moldova Conditions**
Sava Parascovia

15:40-15:50 Coffee Break

15:50-16:50 Forth Session (Chairman Prof. Dr. Yavuz GÜRBÜZ, co-Chairman Igor IANAK)

- **Adaptive Features of The Bianca Variety Growing on Slopes Different Expositions in The Central Region of Viticultur of The Republic of Moldova**
Anna Gribkova, Sergey Kisil, Angela Dumitrash, Alvina Ceban
- **Photosynthetic Activity of Merlot clone 348 in the Conditions of ATU Gagauzia**
Serghei CARA
- **Estimation Of the Productive Potential of Non-Dry Chicken Adlerskaya Silver On The Background Of Application Of Non-Conventional Feed Additives**
Caisin Larisa, Cara Alla
- **Investigation of Sapling Growth Performance of Iğdır Local Apricot Varieties Grafted onto ‘Zerdali’ Rootstocks**
Sade Aydın, Mücahit Pehlivan, Rafet Aslantaş, Berna Doğru Çokran
- **Comparison of Some Hazelnut Producer Countries in terms of Hazelnut Sector**

Turan Karadeniz, Merce Rovira

- **Kırıkhan (Hatay) Ekolojisinde Yetiştirilen Bazı Şeftali-Nektarin Çeşitlerinin Meyve Kalite Özelliklerinin Belirlenmesi**
Derya Kılıç, Oğuzhan Çalışkan, Enver Bahadrlı
- **Bursa Siyahı İncir Çeşidinde Odun Çeliklerinin Köklenmesi Üzerine Farklı Uygulamaların Etkileri**
Derya Kılıç, Safder Bayazit, Oğuzhan Çalışkan

17 December 2021 - Friday

10:30-12:00 Foruth Session (Chairman Prof. Dr. Fatih KILLI, co-Chairman Assoc. Prof. Dr. Sergei CARA)

- **Morphological diversity among apple genotypes of the Güce (Giresun, Turkey) region as revealed by multivariate analysis**
Orhan Karakaya
- **Antakya (Hatay) Koşullarında Yetiştirilen Bazı Çilek Çeşitlerinin Derim Sezonu Süresince Kalite Parametrelerindeki Değişimler**
Ahmet Erhan Özdemir, Derya Kiliç, Özge Kaya Demirkeseer, İbrahim Sağaltıcı, Zafer Karaşahin
- **Badem (*Amygdalus communis* L.) Yetiştiriciliğinde Kullanılan Bazı Anaçların Özellikleri Ve Çoğaltma Yöntemleri**
Birgül Dikmetaş, Ali Kiliç, İbrahim Halil Hatipoğlu, Bekir Erol Ak
- **Bitki virüslerinin teşhisinde yeni bir uygulama: Rekombinaz Polimeraz Amplifikasyonu (RPA)**
Ali ÇELİK
- **Kahramanmaraş Koşullarında Farklı Susam (*Sesamum Indicum* L.) Çeşitlerinin Verim ve Verim Unsurları**
Tahsin Beycioglu, Fatih Killi, Tülay Kan, Mehmet Emre Uluğ
- **Doğu Akdeniz Bölgesi Daphne Türlerinin Tohumla Çoğaltma Tekniklerinin Araştırılması**
Fulya Uzunoğlu, Kazım Mavi

12:00-13:30 Lunch

13:30-14:30 Fifth Session (Chairman Prof. Dr. Safder BAYAZIT, co-Chairman Assoc.Prof.Dr.Igor IANAK)

- **Zonguldak İli Kilimli ve Çatalağzı Yörelerinde Kestane (*Castanea sativa* Mill.) Seleksiyonu**
Huri Balcı, Turan Karadeniz, Ümit Serdar
- ***Capsicum baccatum* L. Biber Türüne Ait F₃ Hatlarının Bazı Kantitatif Bitkisel Özelliklerinin Belirlenmesi**
Hasan Hacbekir, Bekir Bülent Arpacı, Kazım Mavi
- **Determination of the Effect of Some Rare-Earth Elements on Growth and Vitality on Watercress**
Ömer Faruk Coşkun, Kazım Mavi
- **‘Madison’ Kayısı Çeşidinde Bud Feed ve Kalsiyum Nitrat Uygulamalarının Erkencilik, Meyve Verim ve Kalitesine Etkileri**
Oğuzhan Çalışkan, Derya Kılıç, Özcan Taş
- **Determination of Genetic Diversity of *Lemnoideae* (Duckweed) Genotypes by cpDNA Technique**
Ömer Faruk Coşkun, Didem Aydın
- ***Micromeria fruticosa* subsp. *brachycalyx* Türünün Uçucu Yağ Bileşenleri ve Bitki Besin Element Değerleri**
Osman Gedik, Yusuf Ziya Kocabaş, Orçun Çınar, Ömer Süha Uslu
- **Antepfıstığı Yetiştiriciliğinde Makro ve Mikro Gübrelemenin Önemi**
Ahmet Uçar, Bekir Erol Ak, İbrahim Halil Hatipoğlu, Birgül Dikmetaş

14:30-14:40 Coffe Break

14:40-15:40 Sixth Session (Chairman Assoc. Prof. Dr. Elena SCRIPNIC, co-Chairman Assoc. Prof. Dr. Sergei CARA)

- **The Impact of The Cherry Tree Pruning Period on The Production and Quality of Fruit in an Intensive Cultivation System**
Valerian Balan, Vasile Şarban
- **Hematological Parameters in Broiler Chickens Using Feather Meal as Part of Compound Feed**
Caisin Larisa, Putin Victor, Bivol Ludmila, Malenchi Dumitru, Al Khatib Jehad Abd Aljabar Hassan
- **Physico-Chemical Properties of Honey and Sunflower Flowers of Various Soil and Climatic Zones of The Republic of Moldova**
Eremia N., Kosheleva O., Neicovcena I., Makaev, F

- **The Effect of a Pro-Prebiotic Additive on The Quality of Pig Meat**
Grosu Natalia, Caisin Larisa, Vrancean Vasile
- **The Influence of Postharvest Calcium Application in Hydro-Cooling Water on Physiological and Biochemical Parameters of Sweet Cherries of Kordia And Regina Varieties**
Lozan Andrei

15:40-15:50 Coffe Break

15:50-16:50 Seventy Session (Chairman Assoc. Prof. Dr. Prof.Dr. Erol Bekir AK, co-Chairman Assoc. Prof. Dr. Igor IANAK)

- **Influence of the Crown Formation System on The Growth and Fruiting of Sweet Cherry in An Intensive Cultivation System**
Manziuc Valerii, Fedorciucov Ilia
- **The influence of abiotic factors on the development and productivity of apricot plantations in the Republic of Moldova**
Peşteanu Ananie, Negru Ion
- **The Influence of Growth Regulators on The Stimulation Development, Fruit Setting and Productivity of Kordia Cherry Variety**
Peşteanu Ananie, Lozan Andrei
- **Morpho-Physiological Features of The Action of The Drug CCC 750 On Winter Wheat Plants in Crops**
Silvia Secrieru, Antonina Derendovskaia, Dumitru Mihov
- **The Productivity and Quality of New Apple Varieties Depending on The Biological Characteristics of The Variety in The Conditions of The Republic of Moldova**
Inna Bilici, Petru Balan
- **The morphological and genotypic evaluation of some apple sorts and documentation**
T.Kokaj, H.Kuci, P.Harasani

16:50-17:20 Final Session (Chairman Prof.Dr.Seyit Mehmet ŞEN, co-Chairman Assoc.Prof.Sergei CARA)

Speakers

- Assoc. Prof. Dr. Elena SCRIPNIC
- Assoc. Prof. Dr. Andrii SHTIRBU

- Assoc. Prof. Dr. Igor IANAK
- Assoc. Prof. Dr. Sergei CARA
- Prof. Dr. Safder BAYAZIT
- Prof.Dr.Kazım MAVİ
- Prof.Dr.Bekir Erol AK
- Prof. Dr. Fatih KILLI
- Prof.Dr.Yavuz GÜRBÜZ
- Prof.Dr.Turan KARADENİZ

Sponsored by



‘Madison’ Kayısı Çeşidinde Bud Feed ve Kalsiyum Nitrat Uygulamalarının Erkencilik, Meyve Verim ve Kalitesine Etkileri

Oğuzhan Çalışkan, Derya Kılıç, Özcan Taş

Hatay Mustafa Kemal Üniversitesi Ziraat Fakültesi Bahçe Bitkileri Bölümü, Hatay, Türkiye

ÖZET

Bu çalışmada, Bud Feed ve Kalsiyum Nitrat uygulamalarının ‘Madison’ çeşitlerinde meyve tutumu, verim ve meyve kalitesine etkilerinin incelenmesi amacıyla yürütülmüştür. Çalışmada, Bud Feed, Kalsiyum Nitrat ve Bud Feed + Kalsiyum Nitrat uygulamaları tomurcuk patlamasından 30 gün önce uygulanmıştır. Bu uygulamaların çiçeklenme, meyve tutumu, meyve verim ve kalite özelliklerine olan etkileri incelenmiştir. Çalışma sonucunda, Bud Feed, Kalsiyum Nitrat ve Bud Feed + Kalsiyum Nitrat uygulamalarının kontrol bitkilerine göre tam çiçeklenmede 4-5 günlük erkencilik sağlarken, bu uygulamaların meyve olgunlaşmasında 3-4 günlük erkencilik sağladığı tespit edilmiştir. En yüksek ağaç başına verime 45.22 kg/ağaç ile Bud Feed + Kalsiyum Nitrat uygulaması sahip olurken, en düşük verime kontrol bitkileri (23.87 kg/ağaç) sahip olmuştur. Bud Feed + Kalsiyum Nitrat uygulaması en yüksek dekara verim (3.617 ton/da) değerini vermiştir. Ayrıca, Kalsiyum ve Bud Feed + Kalsiyum Nitrat uygulamalarından en yüksek meyve ağırlığı değerleri (sırasıyla, 51.79 g ve 47.10 g) ölçülmüştür. Sonuç olarak, kış soğuklamasının yıllara göre değişkenlik gösterdiği Akdeniz Bölgesinde erkenci kayısı yetiştiriciliğinde Bud Feed + Kalsiyum Nitrat uygulamasının verim ve kalitenin devamlılığı için faydalı olacağı tespit edilmiştir.

Anahtar kelimeler: Kayısı, Bud Feed, Kalsiyum Nitrat, Verim, Kalite

Effects of Bud Feed and Calcium Nitrate Applications on Earliness, Fruit Yield and Quality in ‘Madison’ Apricot Cultivar

ABSTRACT

This study was carried out to examine the effects of Bud Feed and Calcium Nitrate applications on fruit set, yield, and fruit quality in Madison cultivar. In the study, Bud Feed, Calcium Nitrate, and Bud Feed + Calcium Nitrate applications were applied 30 days before bud burst. The effects of these applications on flowering, fruit set, fruit yield, and quality characteristics were investigated. Bud Feed, Calcium Nitrate, and Bud Feed + Calcium Nitrate applications were 4-5 days earlier in full bloom compared to control plants, while these applications were 3-4 days earlier in fruit ripening. Bud Feed + Calcium Nitrate application had the highest yield per tree with 45.22 kg/tree, while control plants (23.87 kg/tree) had the lowest yield. The highest yield per decare (3.617 tons/da) was determined in Bud Feed + Calcium Nitrate application. In addition, the highest fruit weight values (51.79 g and 47.10 g, respectively) were obtained from Calcium and Bud Feed + Calcium Nitrate applications. As a result, Bud Feed + Calcium Nitrate application will be beneficial for the continuity of yield and quality in early apricot cultivation in the Mediterranean Region of Turkey, where winter coldness varies according to years.

Keywords: Apricot, Bud Feed, Calcium Nitrate, Yield, Quality

Rational Exploitation of The Soil and Other Natural Resources, in Accordance with The National Interests

Igor Ianak

Comrat State University, Comrat, Republic of Moldova
E-mail: igoriianac@mail.ru

ABSTRACT

Human activities are having an increasing impact on the integrity of ecosystems that provide essential resources and services for human well-being and economic activities. Managing the natural resources base in a sustainable and integrated manner is essential for sustainable development. In this regard, to reverse the current trend in natural resource degradation as soon as possible, it is necessary to implement strategies which should include targets adopted at the national and, where appropriate, regional levels to protect ecosystems and to achieve integrated management of land.

Natural resources are central to human wellbeing. We cannot live without the clean air we breathe, the plants we eat, or the water we drink. We need them to survive and to thrive.

Agriculture plays a crucial role in addressing the needs of a growing global population and is inextricably linked to poverty eradication, especially in developing countries.

As such, the distribution of resources shapes the face of our planet and the local distinctiveness of our environments.

Key words: ecosystems, essential resources, natural resources, human wellbeing, the distribution of resources.

Adaptive Features of The Bianca Variety Growing on Slopes Different Expositions in The Central Region of Viticulture of The Republic of Moldova.

Anna GRIBKOVA¹, Sergey KISIL¹, Angela DUMITRASH¹, Alvina CEBAN¹

Scientific-Practical Institute of Horticulture and Food Technologies, Department of Ecology and Design
Scientific and Practical, Republic of Moldova

agribcova@gmail.ru, kisilisis@yandex.ru, dumitrash2017@yandex.ru, aceban@aikltd.com,

ABSTRACT

When cultivating the technical sort of Bianca on the slopes of different exposures in the Central zone of viticulture of the Republic of Moldova, the growth parameters of leaf surface (LS), photosynthetic activity and productivity were studied. It is shown that the LS parameters are changed depending on the exposure of the slopes and the location of bushes on them. They increase on the slope of the SW exposure, in comparison with the NE and the plateau. When they are placed in the lower parts of the slopes, adaptive changes occur, associated with an increase in the number of leaves, square of the leaf surfaces and leaf area, on average by one shoot. An adaptive feature of the cultivar is an increase in the content of plastid pigments in the leaves - chlorophylls a, b and carotenoids, as well as an increase in the induction of chlorophyll fluorescence (ICF). The analysis of the induction curves of chlorophyll fluorescence (PC) and induction transitions was carried out. It is shown that the parameters of the primary processes of photosynthesis in chloroplasts, obtained using the IPC method, can be used to monitor the physiological state of grape plants growing on slopes and their adaptation to environmental conditions.

Keywords: Grape, leaf surface, adaptation

Antakya (Hatay) Koşullarında Yetiştirilen Bazı Çilek Çeşitlerinin Derim Sezonu Süresince Kalite Parametrelerindeki Değişimler

Ahmet Erhan ÖZDEMİR¹, Derya KILIÇ¹, Özge KAYA DEMİRKESER^{1*}, İbrahim SAĞALTICI¹, Zafer KARAŞAHİN²

¹Hatay Mustafa Kemal Üniversitesi Ziraat Fakültesi Bahçe Bitkileri Bölümü Antakya / Hatay
²alata Bahçe Kültürleri Araştırma Enstitüsü Müdürlüğü, Erdemli / Mersin

ÖZET

Bu çalışmada materyal olarak, ‘Camarosa’ ve ‘Rubygem’ çilek çeşitleri kullanılmıştır. Bu çalışmanın amacı, Antakya (Hatay) ilinde açıkta yetiştirilen ‘Camarosa’ ve ‘Rubygem’ çilek çeşitlerinin derim sezonu süresince meyve kalitesindeki değişimlerin belirlenmesidir. Derim sezonu süresince meyve ağırlığı, meyve eni ve boyu, görünüş (1–5), meyve rengi L* ve h° değerleri, meyve eti sertliği, pH, suda çözünebilir toplam kuru madde miktarı (SÇKM), titre edilebilir asit miktarı (TEA), SÇKM/TEA oranı, tat (1–9), toplam antioksidan kapasitesi, toplam antosiyanin, toplam fenolik madde, toplam flavanoid ve C vitamini (L-Askorbik asid) miktarları incelenmiştir. Bulgularımıza göre, açıkta yetiştirilen ‘Camarosa’ çilek çeşidinde 2. hasat döneminde bazı bitki besleme öğelerinin değiştirilmesiyle, potasyum ağırlıklı bir beslemeyle tüketici kabul edilebilirliği sağlanabilir. Açıkta yetiştirilen ‘Rubygem’ çilek çeşidinde 2. ve 3. hasat dönemlerinde bazı bitki besleme öğelerinin değiştirilmesiyle, potasyum ağırlıklı bir beslemeyle tüketici kabul edilebilirliği sağlanmasına çalışılabilir.

Anahtar kelimeler: Açıkta alan, çilek, ‘Camarosa’, ‘Rubygem’, *kalite*

Changes of Quality Parameters in Some Strawberry Variety Grown in Antakya (Hatay) Conditions during the Harvest Season

ABSTRACT

In this study, ‘Camarosa’ and ‘Rubygem’ strawberry varieties was used as material. The aim of this study is to determine the changes in fruit quality during the harvest season of ‘Camarosa’ and ‘Rubygem’ strawberry cultivars grown in conventional open field in Antakya (Hatay) province. Fruit weight, width and length, appearance (1–5), fruit color L* and h° values, fruit flesh firmness, juice pH, total soluble solids (TSS), titratable acidity (TA), TSS/TA, taste (1–9), total antioxidant capacity, total anthocyanin, total phenolic solid, total flavonoid and Vitamin C (L-Ascorbic acid) contents were be determined during harvest season. According to the results, consumer acceptability can be achieved with a potassium-based feed by replacing some plant nutrients in the 2nd harvest period of the ‘Camarosa’ and in the 2nd and 3rd harvest periods of the ‘Rubygem’ strawberry varieties grown in the open.

Keywords: Open field, strawberry, ‘Camarosa’, ‘Rubygem’, *quality*

Antepfıstığı Yetiştiriciliğinde Makro ve Mikro Gübrelemenin Önemi

Ahmet Uçar¹, Bekir Erol Ak², İbrahim Halil Hatipoğlu¹, Birgül Dikmetaş¹, Rajab Hassan Ali Al-Mzori³

¹Harran Üniversitesi, Fen Bilimleri Enstitüsü, Bahçe Bitkileri Anabilim Dalı, Ş.URFA

²Harran Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri Bölümü, Ş.URFA

³Ministry of Agriculture, Horticulture Directorate Manager of Horticulture rectorate , North Iraq

Correspondin author: rajab_mzori@yahoo.com

ÖZET

Antepfıstığı özellikle Güneydoğu Anadolu Bölgesinde yetiştirilen en önemli meyve türlerinden biridir. Bölgenin özellikle ekolojik koşulları bu bitkinin yetişmesine olanak sağlamaktadır. Son yıllarda üretimde oldukça önemli artışlar olmuştur. 2020 yılı ülkemiz üretimi 290 000 ton olmuş ve bunun 10 000 tondan daha fazlası ihraç edilerek ülke ekonomisine döviz girdisi sağlamıştır. Meyve ağaçlarında verimliliği etkileyen en önemli faktörlerden sulamanın bölgede başlamasıyla birlikte gübreleme konusunda da önemli adımlar atılmıştır. Diğer meyve türlerinde olduğu gibi makro ve mikro elementler hem ağacın büyümesi ve gelişmesi ve hem de verim ve kalite bakımından çok önemlidir. Antepfıstığı yetiştirilen alanların toprak yapılarının kireçli olması özellikle mikro elementlerin alımı üzerine olumsuz etkide bulunmaktadır. Bu durumda yapılan yaprak analizlerine göre toprak uygulamalarının yanı sıra yaprak gübrelemesini de zorunlu kılmaktadır. Meyve ağaçlarında mikro elementler büyüme ve gelişmenin yanı sıra bazı enzim ve hormonların üretimi için mutlaka gereklidir. Özellikle kireçli topraklarda mikro elementlerin alımı zordur. Antepfıstığında bu sorun sık ortaya çıkmaktadır. Bu nedenle yapılan analizler sonucunda eksiklikler belirlendiğinde yaprak gübresi şeklinde uygulanmalıdır.

Anahtar Kelimeler: Antepfıstığı, Makro/mikro elementler, bitki beslenme

The Importance of Macro and Micro Fertilization in Pistachio Cultivation

ABSTRACT

Pistachio is one of the most important fruit species grown especially in our Southeastern Anatolia Region. Especially the ecological conditions of the region allow this plant to grow. There has been a significant increase in production in recent years. In 2020, our country's production was 290 000 tons, and more than 10 000 tons of this were exported, providing foreign currency input to the country's economy. With the start of irrigation, which is one of the most important factors affecting productivity in fruit trees, in the region, important steps have been taken in terms of fertilization. As in other fruit species, macro and micro elements are very important for the growth and development of the tree, as well as for yield and quality. The soil structure of the pistachio-grown areas is calcareous, which has a negative effect on the uptake of microelements. In this case, according to the leaf analysis, it necessitates foliar fertilization as well as soil applications. In fruit trees, microelements are absolutely necessary for growth and development, as well as for the production of some enzymes and hormones. Uptake of microelements is difficult, especially in calcareous soils. This problem occurs frequently in pistachios. For this reason, when deficiencies are determined as a result of the analyzes made, it should be applied as foliar fertilizer.

Keywords: Pistachio, Macro/micro elements, plant nutrition

Asmada Dormant Dönemde Alınan Gözlerin Meristem Kültürü Çalışmalarında Kullanılma Olanaklarının Araştırılması

Serhan Karakaş^{1*}, Özlem Çalkan Sağlam², Hayri Sağlam²

¹Bilecik Şeyh Edebali Üniversitesi, Lisansüstü Eğitim Enstitüsü, Biyoteknoloji Anabilimdalı,

²Bilecik Şeyh Edebali Üniversitesi, Ziraat ve Doğa Bilimleri Fakültesi, Bahçe Bitkileri Bölümü

* Sorumlu yazar: serhankarakas@gmail.com

ÖZET

Türkiye, bağcılık için dünyanın en elverişli iklim koşullarına sahip ülkelerinden birisidir. Üzüm, ülkemizde en çok yetiştirilen meyve durumunda iken dünyada üçüncü sıradadır. Ülkemiz kuru üzüm üretiminde dünyada birinci, üzüm üretim alanı bakımından beşinci ve üretim miktarı bakımından ise altıncı sıradadır. Bağ alanları ve toplam üzüm üretimi bakımından dünyanın sayılı ülkeleri arasında yer alan Türkiye, birim alandan elde edilen üzüm miktarı göz önüne alındığında elde edilen verim miktarı düşmektedir. Verim düşüklüğünde üretim alanlarındaki yüksek nem ve hastalıklar (bitki patojeni virüsler, mantarlar ve diğer zararlılar), önemli birer tehdit durumundadır. Bu nedenle hastalıktan arı asma fidanı (*Vitis vinifera* L.) üretimi için meristem kültürü ile mikroçoğaltım yaygın bir şekilde kullanılmaktadır. Ancak meristem kültüründe aktif dönemde alınan sürgünlerdeki patojen inokulumunun fazla olması ve yetersiz sterilizasyon koşulları hastalıklardan arı fidan eldesini güçleştirmektedir. Bu amaçla çalışmada, ülkemizde yaygın olarak yetiştiriciliği yapılan üç farklı üzüm çeşidinde (Trakya İlkeren, Alphonse Lavallee ve Sultani Çekirdeksiz) dormant dönemde alınan sürgünlerde meristem kültürü yapılmıştır. Çeşitlerden alınan gözlerde meristem canlılığı, meristem gelişim düzeyleri ve bitkiye dönüşüm oranları araştırılmıştır. Meristem canlılığının en fazla olduğu çeşidin Alphonse Lavallee; en az canlılığa sahip çeşidin Sultani Çekirdeksiz olduğu görülmüştür. Bitkiye dönüşüm oranı bakımından çeşitlerin Trakya İlkeren, Alphonse Lavallee, Sultani Çekirdeksiz şeklinde sıralandığı belirlenmiştir. Yapılan bu çalışma ile hastalıktan arı asma fidanı üretimi için dormant dönemde alınan gözler üretim için önemli avantajlar sağlarken diğer çeşitlerinde uygunluk durumlarının araştırılması gerektiği düşünülmektedir.

Anahtar Kelimeler: Dormant Dönem; Fidan Üretimi; Mikroçoğaltım; Meristem Kültürü

Investigation of the Possibilities of Using Buds Taken in Dormant Period in the Vine in Meristem Culture Studies

ABSTRACT

Turkey is one of the countries with the most favorable climatic conditions in the world for viticulture. While grape is the most grown fruit in our country, it ranks third in the world. Our country ranks first in the world in raisin production, fifth in terms of grape production area and sixth in terms of production amount. Turkey, which is among the few countries in the world in terms of vineyard areas and total grape production, decreases when the amount of grapes obtained per unit area is taken into account. High humidity and diseases (plant pathogenic viruses, fungi and other pests) in the production areas in low yields are important threats. For this reason, meristem culture and micropropagation are widely used for the production of disease-free vine saplings (*Vitis vinifera* L.). However, the high amount of pathogen inoculum in the shoots taken during the active period in meristem culture and insufficient sterilization conditions make it difficult to obtain disease-free seedlings. For this purpose, meristem culture was carried out on shoots taken during the dormant period of three

different grape varieties (Trakya İlkeren, Alphonse Lavallee and Sultani Çekirdeksiz) which are widely grown in our country. Meristem viability, meristem development levels and plant conversion rates were investigated in eyes taken from cultivars. The variety with the highest meristem vitality is Alphonse Lavallee; It was seen that the cultivar with the least vitality was Sultani Çekirdeksiz. It was determined that the cultivars were ranked as Trakya İlkeren, Alphonse Lavallee, Sultani Çekirdeksiz in terms of conversion rate to plant. With this study, it is thought that while the buds taken in the dormant period for the production of disease-free vine saplings provide important advantages for production, it is thought that the suitability status of other varieties should be investigated.

Keywords: Dormant Period; Sapling Production; Micropropagation; Meristem Culture

Badem (*Amygdalus communis L.*) Yetiştiriciliğinde Kullanılan Bazı Anaçların Özellikleri ve Çoğaltma Yöntemleri

Birgül Dikmetaş¹, Ali Kılıç¹, İbrahim Halil Hatipoğlu¹, Bekir Erol Ak², Sovetbek Kenzhebaev^{3*}, Kozhoshev Omurbek³

¹Harran Üniversitesi, Fen Bilimleri Enstitüsü, Bahçe Bitkileri Anabilim Dalı, Ş.URFA

²Harran Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri Bölümü, Ş.URFA

³Institute of Walnut and Fruit Culture NAS, Kyrgyzstan

*Corresponding author: sovken@gmail.com

ÖZET

Badem bahçeleri; sulama imkanının kısıtlı olduğu yerlerde tohum doğrudan araziye ekilerek çöğürlerin yerinde aşılması veya sulama imkanının olduğu arazilerde aşılı fidanlar kullanılarak kurulduğu bilinmektedir. Çöğürlerin yerinde aşılmasında kalem aşılar iyi sonuç vermediği için durgun T göz aşısı tercih edilmesi gerektiği bildirilmiştir. Bademde anaç olarak; badem, erik, şeftali ve şeftali x badem melezleri kullanıldığı tespit edilmiştir. Anaç seçiminde; anaçın çeşitle uyumu, toprak ve iklim şartlarına uygunluk, sulama ve toprağın kök kanseri ve nematod durumu dikkate alınması gerektiği bildirilmektedir. Badem için uygun olan ve yaygın bir şekilde kullanılan tohum anaçından elde edilen badem çöğürleri olduğu bilinmektedir. Bunun yanı sıra badem yozları, şeftali çöğürleri ve zerdali çöğürlerinin de bademe anaç olarak kullanıldığı bilinmektedir. Son yıllarda, GF677, GARNEM vb. bazı klon anaçları da badem yetiştiriciliğinde kullanılmaktadır. Bu anaçlar vegetatif yolla özellikle doku kültürü ile çoğaltılmakta ve üzerine üreticilerin taleplerine göre çeşitler aşılansaktadır.

Anahtar Kelimeler: Badem, anaç, yetiştiricilik, çoğaltma

Features And Reproduction Methods Of Some Rootstocks Used In Almond (*Amygdalus communis L.*) Culture

ABSTRACT

Almond orchards; It is known that in places where irrigation opportunities are limited, seeds are planted directly in the field and grafted on-site, or it is established by using grafted seedlings in lands where irrigation is available. It has been reported that stagnant T bud graft should be preferred because pencil grafts do not give good results in in situ grafting of seedlings. As rootstock in almonds; It was determined that almond, plum, peach and peach x almond hybrids were used. In the selection of rootstock; It is reported that the compatibility of the rootstock with the variety, compatibility with the soil and climatic conditions, irrigation and the root cancer and nematode status of the soil should be taken into consideration. It is known that there are almond seedlings obtained from the seed rootstock, which is suitable for almonds and is widely used. In addition, it is known that almond seeds, peach seeds and cherries seeds are also used as rootstock for almonds. In recent years, GF677, GARNEM etc. Some clone rootstocks are also used in almond cultivation. These rootstocks are propagated vegetatively, especially by tissue culture, and varieties are grafted onto them according to the demands of the producers.

Key Word: Almond, rootstock, cultivation, propagation

Bazı Yabancı Ceviz Çeşitlerinin Orta Anadolu Ekolojisindeki Verim ve Meyve Özellikleri

Safder Bayazıt*, Derya Kılıç, Oğuzhan Çalışkan

Hatay Mustafa Kemal Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri Bölümü, Türkiye

*Sorumlu yazar; sbayazit@mku.edu.tr

ÖZET

Bu araştırma Mucur/Kırşehir ekolojik koşullarında yetiştirilen Chandler, Franquette ve Fernor ceviz çeşitlerinin bazı verim ve meyve özelliklerinin saptanması amacıyla 2 yıl süreyle gerçekleştirilmiştir. Ağaç başına meyve verimi, kabuklu ve iç ceviz ağırlığı, kabuklu meyve eni, boyu, çapı gibi bazı özellikler ölçülmüştür. Denemenin 2 yılında da en yüksek verim Chanler çeşidinden elde edilmiştir. Ceviz çeşitlerinde ortalama kabuklu ceviz ağırlığı 2020 yılında 9.08 g (Chandler), 10.47 g (Franquette) ve 12.58 g (Fernor) olarak elde edilmiştir. 2021 yılında Fernor çeşidinin meyve ağırlığında (9.98 g) düşüş gerçekleşmiştir. Araştırmanın ilk yılında en yüksek iç ceviz oranı Chandler çeşidinden (% 44.63) elde edilirken, ikinci yılında Fernor çeşidinden (%47.87) elde edilmiştir. Ceviz çeşitlerinden elde edilen meyvelerin tamamı ekstra sınıfta yer almıştır. Elde edilen veriler değerlendirildiğinde 3 ceviz çeşidinin de Orta Anadolu koşulları için uygun olduğu görülmüştür. Üretim alanı giderek artan Chandler ceviz çeşidinin ise öteki çeşitlere kıyasla daha verimli olmasına karşılık iç dolumunda problem olduğu görülmüştür.

Anahtar kelimeler: Ceviz (*Junglas regia* L.), çeşit, verim, kabuklu ceviz, iç cevizi, Orta Anadolu

Yield and Fruit Characteristics of Some Foreign Walnut Cultivars in Central Anatolia Ecology

ABSTRACT

This study was carried out to determine some yield and pomological properties of Chandler, Franquette and Fernor walnut cultivars grown in Mucur/Kırşehir, Turkey. Characteristics of walnut such as yield, nut weight, kernel weight, nut width, nut height and nut diameter and some kernel features were investigated. for two years. The highest yield was obtained from the Chanler cultivar in the 2 years of the research. Average nut weight in walnut cultivars was 9.08 g (Chandler), 10.47 g (Franquette) and 12.58 g (fernor) in 2020. In 2021, the fruit weight (9.98 g) of Fernor cultivar decreased. In the first year of the study, the highest kernel ratio was obtained from the Chandler (% 44.63) cultivar, while in the second year it was obtained from the Fernor (%47.87) cultivar. All of the fruits obtained from walnut cultivars were in the extra class. When the data obtained were evaluated, it was seen that all 3 walnut varieties were suitable for Central Anatolian conditions. It has been observed that the Chandler walnut variety, whose production area is increasing, is more efficient compared to other varieties, but there is a problem in stuffing.

Keywords: Walnut (*Junglas regia* L.), cultivar, yield, nut, kernel, Central Anatolia

Bitki virüslerinin teşhisinde yeni bir uygulama: Rekombinaz Polimeraz Amplifikasyonu (RPA)

Ali Çelik

Bolu Abant İzzet Baysal Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Bolu, Türkiye
Sorumlu yazar: alicelik032@gmail.com

ÖZET

Bitki virüsleri, dünya çapında bitki hastalıklarının önde gelen nedenleri arasındadır. Viral hastalıklardan kaynaklanan verim ve kalite kayıpları yılda milyarlarca dolar değerinde olabilmektedir. Virüs hastalıklarının doğru tespiti ve teşhisi, patojen kontrolünde oldukça önemlidir. Yetiştiricilik amacıyla kullanılan üretim materyalinin virüssüz olup olmadığını doğrulamak için hızlı ve hassas teşhis yöntemlerinin geliştirilmesi bitki virüslerinin yayılmasının kontrolünde büyük önem taşımaktadır. Moleküler tekniklerin gelişmesiyle birlikte bitki patojenlerinin tespiti için çeşitli izotermal teknikler geliştirilmiştir. Bunlar arasında son yıllarda geliştirilen Rekombinaz Polimeraz Amplifikasyonu (RPA), bitki virüslerinin hızlı, hassas ve uygun maliyetli tespiti için önemli bir teknik haline gelmiştir. RPA teknolojisi, çok fazla ön hazırlık gerektirmediği ve sabit düşük sıcaklıkta (37–42 °C) amplifikasyona olanak tanıdığı için saha tabanlı senaryolarda uygulanma avantajına sahiptir. RPA, PCR testine göre çok daha düşük maliyetli, duyarlı, özgül ve kısa sürede sonuç veren bir yöntemdir. PCR yönteminin aksine RPA sonuçları çeşitli modifikasyonlar ile reaksiyon bitiminde tüp içerisinde görsel olarak değerlendirilebilmektedir. RPA tekniği, bitki kliniklerinde hızlı tespit, ileri teşhis ve karantina hizmetlerinin izlenmesinde kullanım için hızla umut vaat eden bir araç haline gelmektedir.

Anahtar kelimeler: RPA izotermal, amplifikasyon,

ABSTRACT

Plant viruses are among the leading causes of plant diseases worldwide. Yield and quality losses from viral diseases can be worth billions of dollars per year. Accurate detection and diagnosis of viral diseases is very important in pathogen control. The development of rapid and sensitive diagnostic methods to confirm whether the propagation material used for cultivation is virus-free is of great importance in controlling the spread of plant viruses. With the development of molecular techniques, various isothermal techniques have been developed for the detection of plant pathogens. Among these, Recombinase Polymerase Amplification (RPA), which has been developed in recent years, has become an important technique for the rapid, sensitive and cost-effective detection of plant viruses. RPA technology has the advantage of being applied in field-based scenarios as it does not require much preparation and allows for constant low temperature (37–42 °C) amplification. RPA is a more cost-effective, sensitive, specific, and time-efficient method compared to PCR testing. Unlike the PCR method, the RPA results can be visually evaluated in the tube at the end of the reaction with various modifications. The RPA technique is rapidly becoming a promising tool for use in plant clinics for rapid detection, advanced diagnostics and monitoring of quarantine services.

Keywords: RPA isothermal, amplification

Bursa Siyahı İncir Çeşidinde Odun Çeliklerinin Köklenmesi Üzerine Farklı Uygulamaların Etkileri

Derya Kılıç, Safder Bayazıt, Oğuzhan Çalışkan

Hatay Mustafa Kemal Üniversitesi Ziraat Fakültesi Bahçe Bitkileri Bölümü, Hatay, Türkiye

ÖZET

Bu çalışma, Bursa Siyahı incir çeşidinin çelikle çoğaltılmasında farklı uygulamaların etkilerini belirlemek için yürütülmüştür. Çalışmada, Bursa Siyahı çeşidinin çelikleri kesikli ve standart çelik olarak hazırlanmış ve bu çeliklere IBA, NAA, Root Power, IBA+NAA ve IBA+NAA+Root Power uygulaması yapılmıştır. Bu çeliklerde, köklenme özelliklerinden köklenme oranı, kök sayısı, kök uzunluğu ve kalınlığı ve bitkisel özelliklerden sürgün sayısı, sürgün uzunluğu ve yaprak sayısı incelenmiştir. Çalışma sonucunda, incir çeliklerinin alt kısmında 2 cm'lik kabuk dokunun dikey olarak kesme uygulamasının tüm uygulamalarda çeliklerin kök özelliklerini olumlu etkilediği saptanmıştır. Ayrıca, Bursa Siyahı çeşidinin çeliklerine IBA, NAA ve IBA+NAA uygulamalarının kontrole göre kök sayısı başta olmak üzere köklenme durumu ve kök uzunluğu değerlerini arttırmıştır. Root Power uygulamasının IBA ve NAA ile birlikte yapılmasının çeliklerdeki sürgün boyunu önemli miktarda arttırdığı saptanmıştır. Sonuç olarak, incir çeliklerinde kesme uygulaması sonrasında hormon uygulamasının birlikte kullanılması ile kaliteli fidan elde edilmesine katkı sağlayacağı söylenebilir.

Anahtar kelimeler: İncir, Bursa Siyahı, çelik, köklenme

The Effects of Different Applications on Rooting of Hardwood Cuttings in Bursa Siyahı Cultivar

ABSTRACT

This study was carried out to determine the effects of different applications on the propagation of the Bursa Siyahı fig cultivar by cuttings. In the study, the cuttings of Bursa Siyahı were prepared as a) removing 2 cm of the bark tissue in the lower part of the cutting and b) standard cutting. IBA, NAA, Root Power, IBA+NAA, and IBA+NAA+Root Power were applied to these cuttings. In these cuttings, rooting properties such as rooting rate, root number, root length and thickness and vegetative properties such as shoot number, shoot length and number of leaves were investigated. As a result of the study, vertical cutting of 2 cm bark tissue at the bottom of the fig cuttings increased the root properties of the cuttings in all applications compared to standard cuttings. In addition, IBA, NAA, and IBA+NAA applications to the cuttings of the Bursa Siyahı cultivar increased the root number, rooting status, and root length values compared to the control. The application of Root Power with IBA and NAA significantly improved the shoot length of the cuttings. As a result, high-quality sapling can be obtained by applying hormones after removing a bark tissue at the bottom of the fig cuttings.

Keywords: Fig, Bursa Siyahı, cutting, rooting

***Capsicum baccatum* L. Biber Türüne Ait F₃ Hatlarının Bazı Kantitatif Bitkisel Özelliklerinin Belirlenmesi**

Hasan Hacbekir¹, Bekir Bülent Arpacı², Kazım Mavi¹

¹Hatay Mustafa Kemal Üniversitesi, Ziraat Fakültesi Bahçe Bitkileri Bölümü, Hatay

²Çukurova Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri Bölümü, Adana

ÖZET

Bu çalışma *Capsicum baccatum* var. *pendulum* türüne ait iki genotipin (MKÜ-92 ve MKÜ-19) ebeveyn olarak kullanıldığı ülkemizdeki ilk melezleme çalışması olma özelliğindedir. Bu nedenle ülkemize ait bu tür içerisinde bir çeşit geliştirebilmek amacıyla başlanan araştırmanın bu kısmında bazı F₃ hatların kantitatif bitkisel özellikleri incelenmiştir. Çalışmada ebeveyn ve hatları karakterize edebilmek için 16 kantitatif özellik kullanılmıştır. Sonuç olarak kantitatif özellikler incelendiğinde; ebeveyn ve hatların ortalama bitki boylarının 54.8-95.9 cm, bitki taç genişliklerinin 42.5-69.0 cm, bitki ilk çatallanma yüksekliklerinin 30.1-44.7 cm, yaprak alanlarının 39.13-84.30 cm², meyve uzunluklarının 36.39-104.62 mm, meyve et kalınlıklarının 1.65-3.12 mm, Scoville acılık değerlerinin 9262-99654 arasında değişim gösterdikleri belirlenmiştir. Sonuç olarak bu çalışmada kullanılan ebeveynlerin fenotipik olarak birbirinden farklı olduğu için bu ıslah programı ile geniş bir varyasyon oluşturulmuştur. Bu varyasyondaki her hat, meyve özellikleri ve acılık içerikleri açısından geliştirilmesi hedeflenen biber ıslah programlarında kullanılabilir bulunmuştur.

Anahtar kelimeler: Biber ıslahı, Aji, acılık,

Determination Of Some Quantitative Plant Traits in F₃ Lines Of *Capsicum baccatum* L. Pepper Species

ABSTRACT

This work on *Capsicum baccatum* var. *pendulum* It is the first crossing study in our country in which two genotypes (MKU-92 and MKU-19) belonging to the species are used as parents. For this reason, in this study, which was started in order to develop a variety from this species belonging to our country, quantitative plant characteristics of some F₃ lines were examined. In the study, 18 quantitative characteristics were used to characterize the parents and lines. As a result, when the quantitative properties are examined; Average plant heights are 54.8-95.9 cm, plant crown widths are 42.5-69.0 cm, plant first bifurcation heights are 30.1-44.7 cm, leaf areas are 39.13-84.30 cm². It was showed a wide variation in most of the characteristics that average fruit lengths of 36.39-104.62 mm, fruit thicknesses of 1.65-3.12 mm and Scoville heat units of 9262-99654. As a result, a wide variation was created with this breeding program as the parents used in this study were phenotypically different from each other. Each line in this variation has been found to be usable in pepper breeding programs for traits that are targeted to be developed in terms of fruit characteristics and pungency content.

Key Words: Pepper Breeding, Aji, pungency

Comparison of Some Hazelnut Producer Countries in terms of Hazelnut Sector

Turan KARADENİZ¹, Merce ROVIRA²

¹Bolu Abant İzzet Baysal University, Faculty of Agriculture Dept. of Horticulture-Türkiye

²IRTA Institute of Agrifood Research and Technology IRTA · Natural Resources and Agro-food Development Economics Programme, Spain

ABSTRACT

Hazelnut is one of the most important nut crops processed to many by-products such as chocolate, pastry, roasting, and flour. Its oil can also be used for cooking. In terms of the amount of hazelnut production, Turkey ranks first with 776000 tons followed by Italy with 98000 tons and Azerbaijan with 53000 tons. The countries that produce 11000 to 40000 tons are the United States, Chile, China, Georgia, Iran, Spain, and France. While cultivation is carried out with the traditional ‘ocak’ planting system in Turkey, Azerbaijan, Georgia, and Iran, new planting systems are used in addition to the ‘ocak’ planting systems in Italy, USA, Chile, Spain, and France. At the same time, new planting systems also allow the use of industrial production as well as the use of machines in pruning, fertilization, plant protection, harvest, and postharvest applications. This paper evaluates the present state of hazelnut producer countries in terms of their contribution to the hazelnut sector.

Keywords: Hazelnut, Türkiye, Spain, yield

Çiftlik Hayvanlarında Kenevir Bitkisinin Yem Ve Yem Katkı Maddesi Olarak Kullanımı Ve Önemi

Yavuz Gürbüz¹

¹Yozgat Bozok Üniversitesi, Ziraat Fakültesi, Zootečni Bölümü, Erdoğan Akdağ yerleşkesi, Yozgat;

Sorumlu yazar: yavuz.gurbuz@yobu.edu.tr

Kenevir (*Cannabis sativa* L.), 3 m (veya daha fazla) boyuna kadar yıllık dik bir bitkidir "Sativa" çeşitleri, daha yoğun "Indica" çeşitlerinden daha uzundur. Tüm çeşitler iki ana türe aittir: Yapraklarında, saplarında ve çiçeklerinde bulunan yüksek düzeyde psikoaktif kimyasallar nedeniyle tıbbi ve eğlence amaçlı ilaç üretiminde kullanılan çeşitler. Ve diğeri ise, bu maddeleri çok düşük seviyelerde içeren ve lif, tohum ve yağ üretimi için yetiştirilen endüstriyel kenevir çeşitlerinden oluşmaktadır. Tohumunun ekstraksiyonu sonucu elde edilen yağı ve elde edilen küspesi, çiftlik hayvanlarının beslenmesinde yem ve yem katkı maddesi olarak kullanılabilir. Son yıllarda bu konuda dünyada olduğu gibi, Türkiye’de de önemi giderek artmaktadır. Özellikle medikal amaçlı ve endüstriyel amaçlı kenevir üretiminden elde edilen yan ürünler hayvan beslemede kullanılmakla birlikte, içinde var olan etkilil maddelerinin yem katkı maddesi etkinliği ile ilgili çalışmalar önemli düzeyde dikkati çekmektedir.

Kenevir bitkisi tohumunun yağı alındıktan sonra geri kalan küspesinin besi sığırları (günde 3 kg'a kadar) ve yetişkin koyunların rasyonlarında (günde 0,5 kg) kullanıldığına dair çalışmalar bulunmaktadır. Kenevir küspesi, ısıl işlem görmüş kolza tohumu küspesi ile karşılaştırılmış ve rumende yıkılmayan protein özelliği bakımından üstün özellikleri göstermiştir. Ayrıca, kenevir tohumları yüksek bir enerji içeriğine sahip olduğundan kanatlı hayvan beslemede geleneksel olarak kullanılmaktadır. Etlik piliçlerin kenevir tohumu (%20 oran) ile beslenmesi sonucunda, daha iyi yem dönüşüm oranı, daha yüksek canlı ağırlık artışı, daha düşük kesim yaşı ve daha düşük ölüm oranı ile sonuçlanmıştır. Yine önemli bir çiftlik hayvanı olarak yetiştirilen yumurta tavuklarına kenevir tohumu küspesi verilmiş ve yumurta sarısının yağ asidi bileşimi üzerinde faydalı etkileri görülmüştür. yumurta sarısı toplam kolesterolünü ve tekli doymamış yağ asitlerinin içeriğini azaltırken, toplam ve bireysel çoklu doymamış yağ asitlerinin yanı sıra omega-3 ve omega-6 yağ asitlerini önemli ölçüde artırdı gözlenmiştir. Bu derlemede kenevir bitkisinin çeşitli kısımlarının hayvan beslemede yem kaynağı ve yem katkı maddesi olarak kullanımı ile ilgili yapılan son çalışmalar hakkında bilgi verilecektir. Böylece bu konuda çalışmak isteyen bilim adamlarına, farklı çalışmalar yapmak için literatür olması amaçlanmaktadır.

Anahtar Kelimeler: Alternatif yem, Kenevir bitkisi, Hayvan besleme, yem katkı maddesi, besin maddesi

The Use and Importance of Cannabis Plant as Feed and Feed Additive in Farm Animals

ABSTRACT

Cannabis (Cannabis sativa L.) is an erect annual herb up to 3 m (or more) tall. The "Sativa" varieties are taller than the denser "Indica" varieties. All cultivars belong to two main species: Varieties used in the manufacture of medicinal and recreational drugs due to the high levels of psychoactive chemicals found in their leaves, stems and flowers. And the other consists of industrial hemp varieties containing very low levels of these substances and grown for the production of fiber, seeds and oil. The oil and pulp obtained as a result of the extraction of the seed can be used as feed and feed additives in the nutrition of farm animals. In recent years, its importance has been increasing in Turkey as well as in the world. Although the by-products obtained from cannabis production for medical and industrial purposes are used in animal

nutrition, studies on the feed additive effectiveness of the active substances in it attract attention at a significant level.

There are studies showing that the remaining pulp of the cannabis plant seed is used in the rations of beef cattle (up to 3 kg per day) and adult sheep (0.5 kg per day). Hemp meal was compared with heat-treated rapeseed meal and showed superior properties in terms of non-degradable protein in the rumen. In addition, hemp seeds have a high energy content and are traditionally used in poultry feed. Feeding broilers with cannabis seeds (20%) resulted in better feed conversion rate, higher body weight gain, lower slaughter age and lower mortality. Again, hemp seed meal was given to laying hens raised as an important farm animal and beneficial effects were observed on the fatty acid composition of egg yolk. It has been observed that egg yolk significantly increased total and individual polyunsaturated fatty acids, as well as omega-3 and omega-6 fatty acids, while reducing total cholesterol and content of monounsaturated fatty acids. In this review, information will be given about the recent studies on the use of various parts of the cannabis plant as a feed source and feed additive in animal nutrition. Thus, it is aimed to be a literature for scientists who want to work on this subject, to conduct different studies.

Keywords: Alternative feed, Cannabis plant, Animal nutrition, feed additive, nutrient

Determination of Genetic Diversity of Lemnoideae (Duckweed) Genotypes by cpDNA Technique

Ömer Faruk COŞKUN^{1*}, Didem AYDIN²

^{1*}Hatay Mustafa Kemal University, Faculty of Agriculture, Department of Horticulture, Turkey

²Erciyes University, Faculty of Science, Department of Biology, Turkey

*omerfaruk.coskun@mku.edu.tr

ABSTRACT

The subfamily Lemnoideae (known as duckweed) includes species with high potential as minor vegetables that can be used as food. In this study, it is aimed to determine the molecular characterization of Lemnoideae genotypes of Turkey and to provide molecular data at local and global scale. The cpDNA technique was used for interspecies and intraspecies molecular characterization of 67 genotypes representing 5 different species of Lemnoideae members. 356 sequenced nucleotides were obtained from the cpDNA sequence of Lemnoideae genotypes. In the dendrogram made with Neighbor Joining, it was determined that all genotypes were divided into 4 clusters. It is seen that among all genotypes, the genotypes 64, 66 and 67 clustered separately from the others. Among other genotypes, genotypes 54 and 65 were separated. Significant variation was determined in all lemnoideae genotypes. In this study, an important inventory was provided by determining the genetic structures of duckweeds with high food and bioenergy potential.

Keywords: Lemnoideae, Duckweed, cpDNA, Genetic Characterisation

Determination of the Effect of Some Rare-Earth Elements on Growth and Vitality on Watercress

Ömer Faruk Coşkun^{1*}, Kazım Mavi¹

¹Hatay Mustafa Kemal University, Faculty of Agriculture, Department of Horticulture, Hatay.
*omerfaruk.coskun@mku.edu.tr

ABSTRACT

Nasturtium officinale (Watercress), which is native to Europe, is a perennial leafy vegetable. Due to its good source of natural bioactive compounds, watercress is a nutrient-rich vegetable. Rare earth elements (REEs) have increased their use in industrial and agricultural applications. Increasing the rare earth element level in the soil in plant cultivation directly affects the growth and development of plants. This study aims to compare the growth and vitality of watercress under different some rare earth elements (lanthanum and cerium) concentrations. Plants were exposed to different concentrations of REEs. Plant vitality rates and fresh weight change rates amounts were calculated. For lanthanum, a weight reduction of 3% in the 20 ppm application, 8% in the 100 ppm application, 15% in the 250 ppm application and 20% in the 500 application was determined. For cerium, weight reduction was determined by 3 % in 5 ppm application, 8 % in 20 ppm application, 11 % in 100 ppm application, 17 % in 250 ppm application and 29% in 500 ppm application. It was determined that La and Ce applications produced similar vitality response. It is predicted that high concentrations of rare earth elements may cause significant yield losses in vegetable cultivation.

Key words: Rare earth elements, watercress, *Nasturtium officinale*

Doğu Akdeniz Bölgesi *Daphne* Türlerinin Tohumla Çoğaltma Tekniklerinin Araştırılması

Fulya Uzunoglu, Kazım Mavi

Hatay Mustafa Kemal Üniversitesi Ziraat Fakültesi, Bahçe Bitkileri Bölümü
E-mail: fulyaacikgoz@gmail.com

ÖZET

Bu çalışma Doğu Akdeniz Bölgesi florasında yetişen (*Daphne sericea*, *Daphne oleoides*, *Daphne gnioides*) türlerinin tohumla çoğaltma tekniklerinin belirlenmesi amacıyla yürütülmüştür. Çimlenme testinde tohumlar kontrol, 250 ppm + 24 saat GA³ ve 5°C'de 90 gün katlamaya tabi tutulmuştur. Çıkış testinde kontrol (kurutulmuş tohumlar), yaş meyveden çıkan tohumlar direk ekilmiş, 250 ppm 24 saat GA³, 500 ppm 24 saat GA³, 5°C'de 45 gün soğuk katlama ve 5°C'de 90 gün soğuk katlama olmak üzere 6 farklı uygulamaya alınmıştır. Uygulamalar sonucunda tüm türlerde çimlenme oranı, ortalama çimlenme süresi, çıkış oranı ve ortalama çıkış süreleri saptanmıştır. *Daphne sericea* türünde yapılan çimlendirme denemelerinde en yüksek sonuçlar 90 gün katlamaya alınan tohumlarda yaklaşık 13 günde ve %23.5 oranında çimlendikleri, *D. oleoides* türünde en iyi sonuçlar 90 gün katlamaya alınan tohumlarda yaklaşık 13 günde %17 oranında, *D. gnioides* genotiplerinde ise en iyi sonuçlar aynı şekilde 90 gün katlamaya alınan tohumlarda yaklaşık 14 günde %64 oranında çimlenme tespit edilmiştir. 3 türde de kontrol uygulamalarında hiç çimlenme belirlenmez iken, *D. gnioides* türünde en düşük çimlenme oranı 250 ppm GA³ uygulamasında 12.5 günde %13 oranında saptanmıştır. Çıkış denemeleri incelendiğinde en yüksek çıkış oranı *D. sericea* türünde 90 gün katlamaya alınan tohumların %50'sinin 17.75 günde, *D. oleoides* türünde 120 gün katlamaya alınan tohumların %75'inin 25 günde, *D. gnioides* türünde ise 90 gün katlama yapılan tohumların %50'sinin 27.5 günde çıkış gösterdikleri belirlenmiştir. *D. sericea* ve *D. oleoides* türlerinde kontrol, 250 ppm GA³ ve 500 ppm GA³ uygulamalarında hiç çıkış görülmez iken, en düşük sonuçlar her iki türde de (*D. sericea* %18, *D. oleoides* %3) 45 gün katlamaya alınan tohumlarda saptanmıştır. *D. gnioides* türünde en düşük çıkış %11 oranında 250 ppm GA³ ve 500 ppm GA³ uygulamalarında tespit edilmiştir.

Anahtar kelimeler: *Daphne*, tohum, çimlenme testi, çıkış testi

Investigation of Seed Propagation Techniques of Eastern Mediterranean Region *Daphne* Species

ABSTRACT

This study was carried out to determine the seed propagation techniques of the species (*Daphne sericea*, *Daphne oleoides*, *Daphne gnioides*) growing in the Eastern Mediterranean Region flora. In the germination test, the seeds were subjected to control, 250 ppm + 24 hours GA₃ and 90 days stratification at 5°C. In the emergence test, control (dried seeds), seeds from fresh fruit were sown directly, and they were applied to 6 different applications: 250 ppm 24 hours GA₃, 500 ppm 24 hours GA₃, 45 days cold folding at 5°C and 90 days cold folding at 5°C. Germination rate, average germination time, emergence rate and average emergence times were determined in all species. In the germination trials in *Daphne sericea* species, the highest results were germinated in approximately 13 days and 23.5% in seeds that were folded for 90 days, the best results in *D. oleoides* species were 17% in approximately 13 days, and the best results in *D. gnioides* genotypes. in the same way, 64% germination was detected in approximately 14 days in seeds that were folded for 90 days. While no germination was detected in control applications in all 3 species, the lowest germination rate in *D. gnioides* species was determined

as 13% in 12.5 days in 250 ppm GA3 application. When the emergence trials are examined, the highest emergence rate was observed in *D. sericea* species, 50% of the seeds stratified for 90 days, in 17.75 days, in *D. oleoides* species, 75% of the seeds that were stratified for 120 days, in 25 days, and in *D. gnioides*, in 90% of the seeds that were folded for 90 days. It was determined that 50 of them showed exit in 27.5 days. While no emergence was observed in control, 250 ppm GA3 and 500 ppm GA3 applications in *D. sericea* and *D. oleoides* species, the lowest results were found in seeds that were folded for 45 days in both species (*D. sericea* 18%, *D. oleoides* 3%). In *D. gnioides* species, the lowest output was detected at a rate of 11% in 250 ppm GA3 and 500 ppm GA3 applications.

Keywords: Daphne, seed, germination test, emergence test

Effects Of Application of Gibberellin on Table Grapes

Andrii SHTIRBU*, Natalia SIVAK

National scientific center, “Tairov Institute of viticulture and winemaking”, Odessa, Ukraine

*Corresponding author: stirbu.a@gmail.com

ABSTRACT

Ukraine is a cool climate viticultural region recognized for the cultivation of table grape hardiness cultivars. Grapevine acclimation to cold include senescence of the carbohydrate (sugar and starch) redistribution into shoots (canes), cordons, trunks, and roots. Overcropping can contribute to reduces the amount of carbohydrates available for shoot maturation, which can reduce hardiness.

The aftereffect of the use of GA₃ on the maturation of canes and the yield of table grape cultivars was studied. Based on the results of the laboratory-field experiment, the influence of the cultivar and the use of GA₃ on the accumulation of soluble sugars and starch in shoots in the period after the end of the growing season was established. The effect of the mutual influence of the cultivar and the use of GA₃ is manifested only for the total carbohydrate content in annual shoots.

The use of GA₃ does not have a negative effect on the cane's maturation processes of the cultivars “Flora”, “Talisman” and “Kishmish luchistii”, increases the content of soluble sugars in the shoots by 0.6-1.6%, starch by 0.5-0.8%, their sum by 1,0-2.2%.

The use of GA₃ by the method of local spraying of inflorescences does not have a negative aftereffect on the indicators of plant yield after three years of application of the growth regulator.

Key words: carbohydrate, grape, gibberellin, maturation, starch, shoot, yield.

Estimation Of the Productive Potential of Non-Dry Chicken Adlerskaya Silver On The Background Of Application Of Non-Conventional Feed Additives

Caisin Larisa¹, Cara Alla²

¹Doctor of Science, Professor SAUM, Chisinau, RM

e-mail: caisinlarisa@mail.ru

²phD student, CSU, Comrat, RM

e-mail: adimkara@mail.ru

ABSTRACT

Poultry farming is one of the most important branches of agriculture, which provides the population with valuable food products and is distinguished by the highest level of scientific and technological progress, which is explained by the high early maturity of poultry and the fastest turnover of the herd, while one of the main factors affecting productivity, product quality, poultry health and ensuring the efficiency of industrial production of eggs and poultry meat, is complete feeding.

Modern industrial poultry farming uses highly productive hybrid poultry for the production of eggs and meat, which makes high demands on full-value feeding.

Historically, grain and its processed products (such as bran) are considered traditional feed for poultry. In the understanding of "unconventional" feed, the conventional concept of some products that were not previously used in poultry feeding, or were used with some restrictions, is currently being invested.

According to the results of studies on the use of non-traditional feed additives from feathers and peat, it was revealed that their use contributed to an increase in the productive qualities of poultry. It was found that the young hens of the experimental groups, in comparison with the control, reached physiological maturity earlier, which in turn influenced the increase in the egg weight in the experimental groups compared to the indicators in the control group. At the beginning of laying, at the age of 156 days, the average egg weight in the hens of the first experimental group (EG1) was 47.96 g, in the second experimental group (EG2) - 49.01 g, which is 1.21-2.26 g higher than the control.

The introduction of non-traditional feed additives into the diet had a positive effect on the formation of meat productivity in general and on the slaughter qualities of poultry in the experimental groups as compared with the control. The development of the internal organs of chickens during the period of productive operation is also of some interest: the use of additives was reflected in the increase in the mass of such internal organs as the liver, heart and lungs.

The organoleptic assessment of meat and broth of chickens of all groups was distinguished by good edible properties, however, the taste of meat in EG1 and EG2 was significantly higher than in the control group, while the tenderness of meat was better in EG2 (reliability was $p \geq 0.95$). The taste and richness of the broth were assessed by the tasters higher for products in EG2 compared to the control, which is possibly due to the high content of protein and fat in it.

Keywords: feed additives from feather and peat, laying hens, eggs, slaughter indicators, internal organs, muscles

Farklı Derim Zamanlarının 'Jiro' Trabzon Hurmasının Raf Ömrüne Etkileri ve Trabzon Hurmalarının Soğukta Muhafazası

Ahmet Erhan Özdemir^{1*}, Halil Boran², Soner Baş³

¹Hatay Mustafa Kemal Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri Bölümü, Hatay, Türkiye

²Hatay Mustafa Kemal Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri Bölümü, Hatay, Türkiye

³Hatay Mustafa Kemal Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri Bölümü, Hatay, Türkiye

*Sorumlu yazar: erhan@mku.edu.tr

ÖZET

Buruk olmayan 'Jiro' Trabzon hurması çeşidi meyveleri üç farklı derim zamanında derilmiş, raf ömrü ve soğukta muhafaza sırasında kalitedeki değişimlerin belirlenmesi amaçlanmıştır. Meyveler raf ömrü için 20 °C'de %65–70 oransal nemde 5 gün ve soğukta muhafaza için 0 °C sıcaklık ve %85–90 oransal nem koşullarında 3 ay süreyle depolanmıştır. Raf ömrü ve depolama sırasında alınan örneklerde ağırlık kaybı, meyve eti sertliği (MES), suda çözünebilir toplam kuru madde (SÇKM), pH, titre edilebilir asit (TEA) içerikleri, meyve kabuk rengi (L*, C* ve h°) ile fizyolojik ve mantarsal bozulmalar belirlenmiştir. Depolama sürecinde MES ve TEA içeriklerinde azalmalar, ağırlık kaybı ve SÇKM içeriklerinde artışlar olmuştur. Fizyolojik ve mantarsal bozulmalar ise depolamanın 3. ayında görülmüştür. 3. derimde derilen 'Jiro' Trabzon hurması meyvelerinin ancak 2 ay depolanabileceği saptanmıştır.

Anahtar Kelimeler: Trabzon hurması, Jiro, raf ömrü, soğukta muhafaza, derim

Effects of Different Harvest Times on the Shelf Life of 'Jiro' Persimmons and Cold Storage of Persimmons

ABSTRACT

The fruits of the non-astringent 'Jiro' persimmon variety were harvested in three different harvesting times, and it was aimed to determine the quality changes during shelf life and cold storage. Fruits were stored for 5 days at 20 °C, 65–70% relative humidity for shelf life, and 3 months for cold storage at 0 °C temperature and 85–90% relative humidity conditions. Weight loss, fruit flesh firmness (FFF), total soluble solids (TSS), pH, titratable acid (TA) contents, fruit skin color (L*, C* and h°) and physiological and fungal disorders were determined in the samples taken during shelf life and storage. During storage, FFF and TA decreased while weight loss and TSS content increased. Physiological and fungal disorders were observed at 3rd month of storage. 'Jiro' persimmon fruits from 3rd harvest could be stored for 2 months.

Keywords: Persimmon, 'Jiro', shelf life, cold storage, harvest

Germination and Seedling Growth of Basil: Salinity-Boron Interactions

Mahmut amlıca, Glsm Yaldız, Emreca Aycebin

Department of Field Crops, Faculty of Agriculture, Bolu Abant İzzet Baysal University, 14280, Bolu, Turkey.

ABSTRACT

Salinity is a major environmental problem throughout the world. This problem can be solved by mixing some additive applications. One of them is boron and it can affect the soil positively or negatively under saline conditions. This study was conducted to determine the effect of different boron doses (2,5, 5 and 10 ppm) with 100 mM NaCl dose on basil (Dino cultivar) in laboratory conditions. The experiment was conducted with a randomized complete block design with 3 replications and placed 20 numbers from seeds of each plant. According to the study results, the germination rate was found between 20.0-45.0%. The results noted that root length changed between 1.0-2.44 cm and stem length changed between 2.73-4.3 cm. The highest fresh root and stem weights were found in 100 mM NaCl and 5 ppm+100 mM NaCl applications. Stem and root length showed significant differences and it changed between 1.34-2.85.

Considering different boron doses, the highest values were found in boron doses or their interactions with NaCl dose except for root length and fresh root weight. It is suggested that boron applications can be applied for the NaCl conditions with the enough doses.

Keywords: Basil, Boron, Salinity

Продуктивность Сортов Крыжовника И Продолжительность Срока Эксплуатации Насаждений В Условиях Республики Молдова

Сава Парасковья Васильевна

ПУ Научно-Практический Институт Садоводства и Пищевых Технологии, лаборатория ягодных культур, г. Кишинев, Республика Молдова

РЕЗЮМЕ

В работе представлены данные, полученные в результате изучения продуктивности некоторых сортов крыжовника в зависимости от возраста растений и продолжительности периода эксплуатации этих плантаций в условиях Республики Молдова. Исследования проводились в период 1995-2015 годы, на неорошаемом участке при схемах посадки 2,5x0,75 м; 2,5x1,0 м; 2,5x1,25 м, где изучались сорта: Донецкий крупноплодный, Донецкий первенец, а на орошаемом участке при схеме посадки 1,5x1,0 м проводились над сортами: Каптиватор, Северный капитан, Садко. В результате исследований установлено, что в зависимости от возраста насаждения, сорта и схемы посадки. Максимальные урожаи получены на 10-м году после посадки в пределах 12,5-16,2 т/га у сорта Донецкий крупноплодный и 12,1-16,4 т/га у сорта Донецкий первенец, с наибольшими значениями на схемах с наибольшей густотой посадки. Начиная с 11-12-го года после посадки урожайность снижается на 36,0-70,2%. А на орошаемом участке при схеме посадки 1,5x1,0 м максимальной урожай получен на 10-й год после посадки у сорта Садко - 16,0 т/га и у сорта Колобок - 23,3 т/га, а на 11-й год после посадки у сорта Северный капитан-29,1 т/га и у сорта Каптиватор-30,0 т/га. Уже начиная с 12-го года после посадки урожайность снижается на 34,4-64,0%. На плантациях крыжовника, срок эксплуатации которых превышает 9-10 лет, урожайность постоянно снижается, и поэтому их дальнейшее возделывание нерентабельно.

Ключевые слова: крыжовник, сорта, урожай, возраст насаждений, срок эксплуатации, Республика Молдова.

Gooseberry Varieties Productivity And Duration Of Exploitation Period Of Plantations In The Republic Of Moldova Conditions

ABSTRACT

The paper presents the data obtained as a result of studying the productivity of some gooseberries varieties, depending on the plants age and the duration of the exploitation period of these plantations in the Republic of Moldova conditions. The studies were carried out in the period 1995-2015, on a non-irrigated area with planting distances: 2.5x0.75 m; 2.5x1.0 m; 2.5x1.25 m, where the varieties were studied: Donetski crupnoplodnai, Donetski pervenets, and on an irrigated area with a planting distance 1.5x1.0 m, they were carried out over varieties: Captivator, Severnai capitan, Sadco. As a result of the research, it was found that, the variety and the planting distance depending on the age of the planting. The maximum yields were obtained in the 10th year after planting in the range of 12.5-16.2 t/ha for the variety Donetski crupnoplodnai and 12.1-16.4 t/ha for the variety Donetski pervenets, with the highest values on the schemes with the highest planting density. Starting from the 11-12th year after planting, the yield decreases by 36.0-70.2%. And on an irrigated area with a planting scheme of 1.5x1.0 m, the maximum yield was obtained on the 10th year after planting for the variety Sadco - 16.0 t/ha and for the variety Coloboc - 23.3 t/ha, and for the 11th a year after planting for the variety Severnai capitan - 29.1 t/ha and for the Captivator variety - 30.0 t/ha. Starting from the 12th year after planting, the yield decreases by 34.4-64.0%. On gooseberry plantations, the service life of which exceeds 9-10 years, the yield is constantly decreasing, and therefore their further cultivation is unprofitable.

Key words: gooseberries, varieties, yield, planting age, exploitation period, Republic of Moldova.

Göynük Armut Çeşidinin Agromorfolojik Özelliklerinin Belirlenmesi

Turan Karadeniz¹, Tuba BAK², Emrah GÜLER¹, Haydar Kurt³

¹Bolu Abant İzzet Baysal Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri Bölümü, Bolu, Türkiye

²Bolu Abant İzzet Baysal Üniversitesi, Mudurnu Süreyya Astarıcı Meslek Yüksekokulu, Bitkisel ve Hayvansal Üretim Bölümü, Mudurnu, Bolu, Türkiye

³ Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Van, Türkiye

ÖZET

Bu çalışma, Bolu ili Göynük ilçesinde yetişen Göynük Armudu'nun agromorfolojik özelliklerini belirlemek amacıyla yürütülmüştür. Yörede fındık, ceviz, ayva, kiraz, armut gibi birçok meyve türü yetişmektedir. Bu meyvelerin bazıları kültür çeşidi iken bazıları ise mahalli çeşit olarak kalmıştır. Yörede Göynük armudu sevilerek ve beğenilerek tüketilen mahalli bir çeşittir Göynük ilçesi Hacımahmutlar köyünde yetişen mahalli Göynük armut çeşidinden alınan meyve örneklerinde pomolojik analizler yapılarak, bu çeşidin tanıtılmasına çalışılmıştır. Buna göre, Göynük armut çeşidinin ortalama meyve ağırlığı 81.16 g, suda eriyebilen kuru madde miktarı (ŞÇKM) %14.25, pH 5.47 ve titre edilebilir asitlik 0.07 olarak tespit edilmiştir. Çalışmada, Göynük armudunun meyve özelliklerinin standart armut çeşitleri ile yarışabilecek nitelikte olduğu, ileride yapılacak çalışmalarla standart armut çeşitlerimiz arasında yer alacağı kanaatine varılmıştır.

Anahtar kelimeler: Armut, yerel çeşit, Göynük

Determine of Argomorfolojik Properties of The Göynük Pear

ABSRTACT

This study was carried out to determine the agromorphological characteristics of Göynük Pear, which is grown in the Göynük district of Bolu province. Many types of fruit such as hazelnut, walnut, quince, cherry, pear are grown in the region. While some of these fruits were cultivated varieties, some remained as local varieties. Goynuk pear in the region is a local variety that is consumed with love and appreciation. According to this, the average fruit weight of Göynük pear cultivar was 81.16 g, the amount of water-soluble dry matter was 14.25%, pH 5.47 and titratable acidity 0.07. In the study, it was concluded that the fruit characteristics of Göynük pear can compete with standard pear varieties, and that it will be among our standard pear varieties with future studies.

Keywords: Pear, local variety, Göynük

HEMATOLOGICAL PARAMETERS IN BROILER CHICKENS USING FEATHER MEAL AS PART OF COMPOUND FEED

Caisîn Larisa, Putin Victor, Bivol Ludmila, Malenchi Dumitru, Al Khatib Jehad Abd Aljabar Hassan

Universitatea Agrară de Stat din Moldova, Chisinau, Republic of Moldova

Corresponding author: caisinlarisa@mail.ru

ABSTRACT

Modern technology of industrial poultry farming causes a significant functional load on the poultry organism. In intensive poultry farming, biologically complete feeding is a decisive factor in obtaining high productivity. The production of feed for poultry is constrained by the lack of protein feed of plant and animal origin. In the researches, the protein feather concentrate was tested on the Cobb 500 cross hybrid from 0 to 42 days. The poultry feather-based feed additive used in the experiment was made according to the special technology of the “Terafix” company.

As a result of the experiment on the use of feather protein concentrate in different concentrations to broiler chickens and the study of its effect on the health of chickens, of their clinical-hematological, physiological-metabolic status and productivity indicators, it was found out that for the chickens of all experimental groups average indicators for the level of erythrocytes, hemoglobin, hematocrit and lymphocytes were within the physiological norm. The indicators of leukocytes are lower in the experimental groups than in the control group, which confirms the positive effect of feather concentrate on hematopoietic functions, as well as on their nonspecific resistance.

The obtained results of the use of protein feather concentrate in determining the total protein in the experimental groups showed a slight increase in comparison with the control group, which confirms a positive effect on protein metabolism and nonspecific resistance of broiler chickens. According to experimental data, under production conditions, the optimal concentration of feather meal in the diet of broiler chickens was 4.5% at the start, in the growth and finish stage - 2.5%.

Keywords: feather protein concentrate, broiler chickens, hematological analysis

ГЕМАТОЛОГИЧЕСКИЕ ПОКАЗАТЕЛИ У ЦЫПЛЯТ БРОЙЛЕРОВ ПРИ ИСПОЛЬЗОВАНИИ В СОСТАВЕ КОМБИКОРМОВ ПЕРЬЕВОЙ МУКИ

Кайсын Лариса^{*}, Путин Виктор^{**}, Бивол Людмила^{***},
Маленки Дмитрий^{****}, Al Khatib Jehad Abd Aljabar Hassan^{****}

^{*}доктор наук, профессор ГАУМ, г. Кишинев, РМ

^{**}доктор, доцент ГАУМ, г. Кишинев, РМ

^{***}доктор, ассистент ГАУМ, г. Кишинев, РМ

^{****}аспирант, ГАУМ, г. Кишинев, РМ

^{****}аспирант, ГАУМ, г. Кишинев, РМ

e-mail: caisinlarisa@mail.ru

Абстракт:

Современная технология промышленного птицеводства обуславливает значительную функциональную нагрузку на организм птицы. При интенсивном ведении птицеводства биологически полноценное кормление является решающим фактором получения высокой продуктивности. Производство кормов для сельскохозяйственной птицы сдерживается недостатком белковых кормов растительного и животного происхождения. В исследованиях было проведено тестирование белкового перьевого концентрата на гибриде кросса Кобб 500 от 0 до 42 дней. Используемая в опыте кормовая добавка на основе пера птицы изготавливалась по специальной технологии компании «Терафикс».

В результате проведения эксперимента по применению перьевого протеинового концентрата в разных концентрациях цыплятам бройлерам и изучению его влияния на здоровье цыплят, их клинико-гематологический, физиолого-метаболический статус и показатели продуктивности было установлено, что у цыплят всех опытных групп средние показатели по уровню эритроцитов, гемоглобина, гематокрита и лимфоцитов находилось в пределах физиологической нормы. Содержание лейкоцитов оказалось ниже в опытных группах в сравнении с контролем, что указывает на положительное влияние включения добавки перьевого концентрата в рацион цыплят на гематопоэтические функции, а также на неспецифическую их резистентность.

Полученные результаты по применению белкового перьевого концентрата в рационы цыплят в опытных группах показали незначительное повышение общего белка, в сравнении с контрольной группой, что также подтверждает положительное влияние добавки на белковый обмен и неспецифическую резистентность цыплят-бройлеров.

Согласно экспериментальным данным, в условиях производства оптимальная концентрация ввода перьевого концентрата в рацион цыплятам-бройлерам составляла на старте 4,5%, для периода роста и в период финиша - 2,5%.

Ключевые слова: перьевого протеиновый концентрат, цыплята бройлеры, гематологический анализ

Influence of the crown formation system on the growth and fruiting of sweet cherry in an intensive cultivation system

Manziuc Valerii, Fedorciucov Iliia

Faculty of Horticulture, State Agrarian University of Moldova, Chisinau, Republic of Moldova

ABSTRACT

In recent years, the fruit growers of the Republic of Moldova began to actively create industrial cherry plantations, planting modern varieties grafted on medium and weak vegetative propagated rootstocks. However, an intensive system of cherry growing requires the use of completely new forms of tree crowns. The purpose of this study was a comprehensive study of new formations in an intensive system of sweet cherry cultivation for the ecological conditions of Moldova, contributing to the rapid entry of trees into fruiting and an increase in the productivity of sweet cherry plantations. The experimental garden was planted in the spring of 2016 with the Kordia and Regina cultivars grafted on the Gisela 6 rootstock, 7 crown forms were studied: Vogel Central Leader (control), Tiered palmette, Spanish bush, KGB system, UFO, Free-growing Spindle, Tall Spindle Axe. In total, for 2 years of fruiting, the formation of Longline palmette turned out to be the most productive per tree. The highest yield per unit area was harvested for the Regina cultivar when forming trees according to the Tall Spindle Axe with the placement of 2500 trees per hectare, amounting to 34.1 t / ha.

Keywords: sweet cherry, cultivars, crown shapes, growth processes, productivity.

Влияние системы формирования кроны на рост и плодоношение черешни в интенсивной культуре возделывания

Manziuc Valerii., Fedorciucov Iliia

Faculty of Horticulture, State Agrarian University of Moldova, Chisinau, Republic of Moldova

В последние годы плодороды Республики Молдова стали активно создавать промышленные плантации черешни, высаживая современные сорта привитые на средне и слаборослые вегетативно размножаемые подвои. Однако интенсивная система выращивания черешни требует использования совершенно новых форм кроны деревьев. Целью данного исследования было всестороннее изучения новых формировок в интенсивной системе возделывания черешни для экологических условий Молдовы, способствующих быстрому вступлению деревьев в плодоношение и увеличению продуктивности плантаций черешни. Опытный сад посажен весной 2016 сортами Кордия и Регина привитыми на подвое Гизела 6, изучались 7 форм кроны: Разреженно-ярусная крона(контроль), Ярусная пальметта, Испанский куст, Система КГБ, UFO, Веретеновидный кус и Стройное веретено. В сумме за 2 года плодоношения наиболее продуктивной в расчете на одно дерево оказалась формировка Ярусная пальметта, однако в расчете на единицу площади наибольший урожай в опыте был собран по сорту Регина при формировании деревьев по типу Стройного веретена и размещением на 1 га 2500 деревьев, составивший в сумме 34,1 т/га.

KEYWORDS: Черешня, сорта, формы кроны, ростовые процессы, урожайность.

Zerdali Anacı ile Aşıl原因an İğdır Yerel Kayısı Çeşitlerinin Fidan Gelişim Performanslarının İncelenmesi

Sade Aydın¹ Mücahit Pehlivan^{1*} Rafet Aslantaş² Berna Doğru Çokran¹

¹İğdır Üniversitesi Ziraat Fakültesi Bahçe Bitkileri Bölümü, Şehit Bülent Yurtseven Yerleşkesi, 76000 Suveren/İğdır

² Eskişehir Osmangazi Üniversitesi Ziraat Fakültesi Bahçe Bitkileri Bölümü, Ziraat Caddesi, Kütahya Yolu, 26160 Odunpazarı/Eskişehir

*Sorumlu yazar: mpehlivan@gmail.com

ÖZET

Zerdali anaçları ile aşıl原因an Şalak, Beyaz Kayısı, Ordubat ve Teberze çeşitlerine ait aşı kombinasyonlarının İğdır ekolojik koşullarında bir vejetasyon döneminde büyüme ve gelişme performanslarının belirlenmesi amacıyla yapılan bu çalışma 2014 ile 2015 yılları arasında yürütülmüştür. Eylül 2014'te 'T' göz aşısı ile aşıl原因an materyaller aşıl原因madan 6 ay sonra 30 Nisan 2015 tarihinden itibaren 20 gün aralıklar ile 10 Ekim 2015 tarihine kadar dokuz kez aşıllı her bir kombinasyon materyallerinde anaç ve kalem çap değerleri ile sürgün boyu (fidan boyu) kaydedilmiştir. Tüm ölçüm tarihlerinde aşı kombinasyonları arasında anaç çapı, kalem çapı ve sürgün boyu bakımından $P \leq 0.05$ düzeyinde önemli farklar tespit edilmiştir. Son ölçümün yapıldığı 10 Ekim 2015 tarihinde Zerdali/Şalak kombinasyonunda anaç ve kalem çapı ile sürgün boyu değerleri sırası ile 26.63 mm, 20.64 mm ve 281.33 cm; Zerdali/Beyaz Kayısı kombinasyonunda sırasıyla 27.89 mm, 24.05 mm, 271.07 cm; Zerdali/Teberze kombinasyonunda 25.45 mm, 18.97 mm, 294.63 cm ve Zerdali/Ordubat kombinasyonunda ise anaç, kalem çapı ve sürgün boyu değerleri 28.24 mm, 22.76 mm ve 284.03 cm olarak tespit edilmiştir. Tüm aşı kombinasyonlarında fidan büyüme gelişiminin tatminkâr düzeyde olduğu belirlenmiştir.

Anahtar Kelimeler: Kayısı fidanı, büyüme performansı, İğdır.

Investigation of Sapling Growth Performance of İğdır Local Apricot Varieties Grafted onto 'Zerdali' Rootstocks

ABSTRACT

This study, which aimed to examine the vegetative growth performance of four native apricot cultivars (Şalak, White Apricot (Ağerik), Ordubat and Teberze) and wild apricot seedlings (Zerdali) based rootstocks, was carried out in İğdır ecological conditions between 2014 and 2015. For this aim, the materials was grafted dormant T budding in September of 2015. Six months after T budding, grafted samples were evaluated in terms of rootstock, scion diameter and sapling height at 20 day intervals from April 30, 2015 to October 10, 2015. Significant differences ($P \leq 0.05$) were found between graft combinations as to rootstock diameter, scion diameter and sapling height all measurement dates. On October 10, 2015 when the last measurement was made rootstock and scion diameter and shoot length values were found to be 26.63 mm, 20.64 mm and 281.33 cm for Zerdali/Şalak; 27.89 mm, 24.05 mm, 271.07 cm for Zerdali/White Apricot; 25.45 mm, 18.97 mm, 294.63 cm for Zerdali/Teberze and 28.24 mm, 22.76 mm ve 284.03 cm for Zerdali/Ordubat combinations, respectively. It was determined that sapling growth performance was at a satisfactory level in all grafted combinations.

Keywords: Apricot sapling, growth performance, İğdır.

Kahramanmaraş Koşullarında Farklı Susam (*Sesamum indicum* L.) Çeşitlerinin Verim ve Verim Unsurları

Tahsin Beycioglu, Fatih Kılılı, Tülay Kan, Mehmet Emre Uluğ

Kahramanmaraş Sütçü İmam Üniversitesi Ziraat Fakültesi Tarla Bitkileri Bölümü, Türkiye

ÖZET

Bu çalışmada 3 yıl (2019-2020-2021) süre ile Kahramanmaraş koşullarında 6 farklı susam (*Sesamum indicum* L.) çeşidinin (Arslanbey, Boydak, Hatipoğlu, Kepsut-99, Orhangazi-99 ve Tan-99) verim ve verim unsurlarının belirlenmesi amaçlanmıştır. Çalışmada çeşitlerin bitki boyu, dal sayısı, kapsül sayısı, bin tohum ağırlığı ve tohum verimi özellikleri incelenmiştir. İncelenen tüm özellikler yönünden çeşitler ve yıllar arasında önemli farklılıkların olduğu belirlenmiştir. Çeşitlerin bitki boylarının 118.8 – 127.93 cm, dal sayılarının 2.91 – 3.92 adet bitki⁻¹, kapsül sayılarının 83.73 – 147.01 adet bitki⁻¹, bin tohum ağırlıklarının 3.28 – 3.60 g ve tohum verimlerinin 163.85 – 220.99 kg da⁻¹ arasında değiştiği, en yüksek bitki başına kapsül sayısı ve dekara verimin Arslanbey çeşidinden elde edildiği belirlenmiştir.

Anahtar kelimeler: Susam, verim ve verim unsurları.

Seed Yield and Yield Components Of Different Sesame Varieties In Kahramanmaraş Conditions

ABSTRACT

In this study, it was aimed to determine the yield and yield components of 6 different sesame (*Sesamum indicum* L.) varieties (Arslanbey, Boydak, Hatipoğlu, Kepsut-99, Orhangazi-99 and Tan-99) in Kahramanmaraş conditions for 3 years (2019-2020-2021). In the study, plant height, number of branches, number of capsules, thousand seed weight and seed yield characteristics of the cultivars were examined. It has been determined that there were significant differences between cultivars and years in terms of all the characteristics examined. The results showed that plant height, number of branches, number of capsules, thousand seed weight and seed yield for sesame cultivars ranged between 118.8 – 127.93 cm, 2.91 – 3.92 plant⁻¹, 83.73 – 147.01 plant⁻¹, 3.28 – 3.60 g and 163.85 – 220.99 kg da⁻¹, respectively. The highest number of capsules per plant and seed yield were obtained from Arslanbey variety.

Key words: Sesame, yield and yield components.

Evaluation of the resistance of maize (*Zea mays* L.) lines and varieties to *Striga hermonthica* (Del.) Benth

Kiendrebeogo Ali, Sanou Adama

ABSTRACT

Striga hermonthica (Del.) Benth. is a major biotic constraint to cereal crop production in Africa. It infests fields and compromises the production of maize, one of the staple food crops of the country's populations. Maize is the second most important cereal crop produced in Burkina Faso. This study aims to contribute to the improvement of maize productivity through the integrated management of *S. hermonthica* in Burkina Faso. Eight (08) maize genotypes were evaluated for their resistance to *S. hermonthica* *in vitro* and *in vivo*. The *in vitro* test revealed that the variety Espoir (1.66 mm) as well as the lines TZI 18 (3.37 mm), ELN45-1-1-1 (8.59 mm) and FBML 10 (4.33 mm) can be considered as having a low production ability of the *Striga* seed germination stimulant. The pot and field tests showed that the line FBML 10 (0.5g/pot) could be considered tolerant as it resulted in late emergence of *Striga*. The varieties Komsaya (63.6 g/plant), SR 21 (93 g/plant), Espoir (42 g/plant) and Wari (73.7 g/plant) could also be considered as tolerant to *Striga hermonthica* because despite their high infestation in the field, they show a good yield level.

Keywords: maize (*Zea mays* L.), line, variety, resistant, tolerant, *Striga hermonthica*, Burkina Faso

Kırıkhan (Hatay) Ekolojisinde Yetiştirilen Bazı Şeftali-Nektarin Çeşitlerinin Meyve Kalite Özelliklerinin Belirlenmesi

Derya Kılıç, Oğuzhan Çalışkan, Enver Bahadırılı

Hatay Mustafa Kemal Üniversitesi Ziraat Fakültesi Bahçe Bitkileri Bölümü, Hatay, Türkiye

ÖZET

Bu çalışma, Plagold 16, Garcica ve Platifirst şeftali-nektarin çeşitlerinin Türkiye'nin Doğu Akdeniz Bölgesinde yer alan Kırıkhan (Hatay) ekolojisindeki hasat tarihleri ve meyve kalite özelliklerini incelemek amacıyla yürütülmüştür. Çalışmada meyvenin fiziksel özelliklerinden meyve ağırlığı, meyve iriliği (en, boy ve yükseklik), meyve eti sertliği ve kimyasal özelliklerinden suda çözünebilir toplam kuru madde miktarı (SÇKM), pH ve asitlik ölçümleri yapılmıştır. Ayrıca, meyve kabuk ve et rengi (L, a, b, C ve h° olarak) ölçülmüştür. Çalışma sonucunda, çeşitlerin hasat tarihleri 25 Mayıs (Plagold 16 ve Garcica N48-21) ve 4 Haziran (Platifirst) olarak gerçekleşmiştir. En yüksek meyve ağırlığı ve SÇKM oranı Plagold 16 (sırasıyla, 116.99 g ve %12.33) ve Platifirst (sırasıyla, 118.46 g ve %11.30) çeşitlerinde tespit edilmiştir. Ayrıca, en koyu kırmızı renk oluşumunun Plagold 16 ve Platifirst çeşitlerinde meydana gelmiştir. Sonuç olarak, Plagold 16 şeftali ve Platifirst yassı şeftali çeşitlerinin Türkiye'nin Doğu Akdeniz Bölgesinde yetiştirilmesi için oldukça ümitvar oldukları tespit edilmiştir.

Anahtar kelimeler: Şeftali-nektarin, adaptasyon, hasat tarihi, meyve kalitesi

Investigation of Fruit Quality Properties of Some Peach-Nectarine Cultivars Cultivated in Kırıkhan (Hatay) Ecological Conditions.

ABSTRACT

This study was carried out to determine the harvest dates and fruit quality characteristics of Plagold 16, Garcica, and Platifirst peach-nectarine cultivars in Kırıkhan (Hatay) ecological conditions, in the Eastern Mediterranean Region of Turkey. In the study, the physical properties of the fruit such as fruit weight, fruit size (width, length, and height), fruit firmness and chemical properties such as total soluble solids (TSS), pH, and acidity were examined. In addition, fruit skin and flesh color parameters (as L, a, b, C and h°) were measured. As a result of the study, the harvest dates of the cultivars were 25 May (Plagold 16 and Garcica N48-21) and 4 June (Platifirst). The highest fruit weight and TSS ratio were determined in Plagold 16 (116.99 g and 12.33 %, respectively) and Platifirst (118.46 g and 11.30%, respectively) cultivars. Also, the dark red color values occurred in Plagold 16 and Platifirst cultivars. As a result, Plagold 16 peach and Platifirst flat peach cultivars were very promising for cultivation in the Eastern Mediterranean Region of Turkey.

Keywords: Peach-nectarine, adaptation, harvest date, fruit quality

Kartalkaya Dağında Seçilen Bir Kuşburnu Genotipinin Agromorfolojik Özellikleri

Turan Karadeniz¹, Berna Doğru Çokran², Tuba Bak³, Emrah Güler²

¹Bolu Abant İzzet Baysal Üniversitesi, Ziraat Fakültesi, Bolu, Türkiye

²Iğdır Üniversitesi, Ziraat Fakültesi, Iğdır, Türkiye

³Bolu Abant İzzet Baysal Üniversitesi, Mudurnu Süreyya Astarıcı Meslek Yüksekokulu, Mudurnu, Bolu, Türkiye

ÖZET

Kuşburnu, Türkiye'nin birçok yöresinde yetişen bir meyve türüdür. Yayılma alanlarında çok sayıda birbirinden farklı özelliklere sahip kuşburnu genotipleri bulunmaktadır. Bu genotipler arasında suda çözünebilir kuru madde miktarı, C vitamini ve meyve ağırlığı bakımından üstün özelliklere sahip genotiplerin ortaya çıkarılması ıslah çalışmaları için önem taşımaktadır. Kuşburnunun doğal yayılma alanları içinde Bolu ili de yer almaktadır. Bu çalışmada, Bolu ili sınırlarında bulunan Kartalkaya dağının 1200-1600 m rakımları arasında, kuzey ve batı yönünde yürütülen seleksiyon çalışmaları sonucunda, bir kuşburnu genotipinin meyve yapısı, verimi ve albeniliği dikkat çekici bulunarak değerlendirilmeye alınmıştır. İncelenen kuşburnu genotipinde meyve ağırlığı 3.36 g, suda çözünebilir kuru madde miktarı %29.00, pH değeri 4.26, C vitamini 7.08 mg/l olarak belirlenmiştir. Değerlendirmede, meyvenin fenolik bileşiklerinden catechin 595,84 mg/L, rutin 46,44 mg/L ve gallic asid 38,65mg/L değerleri öne çıkarken, bunları chlorogenic, caffeic, syringic, p-coumaric, q-coumaric, myricetin, quercetin izlemiştir.

Anahtar Kelimeler: Kuşburnu, seleksiyon, C vitamini, Fenolik bileşikler

Agromorphological Characteristics of a Rosehip Genotype Selected in Kartalkaya Mountain

ABSTRACT

Rosehip is a wild fruit grown in many parts of Turkey. There are many rosehip genotypes with different characteristics in their distribution areas. Among these genotypes, it is important for breeding studies to reveal genotypes with superior characteristics in terms of amount of water soluble dry matter, vitamin C and fruit weight. Bolu province is also among the natural spreading areas of rosehip. In this study, fruit structure, yield and attractiveness of a rosehip genotype were evaluated, as a result of selection studies carried out in the northern and western directions, at an altitude of 1200-1600 m on Kartalkaya mountain located in the borders of Bolu province. The fruit weight of the examined rosehip genotype was 3.36 g, the amount of water-soluble dry matter was 29.00%, the pH value was 4.26, and the vitamin C was 7.08 mg/l. In the evaluation, catechin 595.84 mg/L, rutin 46.44 mg/L, gallic acid 38.65mg/L values of the phenolic compounds of the fruit came to the fore, while these were chlorogenic, caffeic, syringic, p-coumaric, q-coumaric, myricetin, quercetin followed.

Keywords: Rosehip, selection, Vitamin C, Phenolic compounds

Main Directions of The Grape Breeding Process in The Nsc «V.Ye. Tairov Institute of Viticulture and Winemaking»

Kovaleva I.A., Gerus L.V., Fedorenko M.G., Salii O.V., Skrypnyk V.V., Papina O.S.
Dzhumanazarova S.P., Burhelia N.Ye.

NSC «V.Ye. Tairov Institute of Viticulture and Winemaking», NAAS of Ukraine

ABSTRACT

Replenishment of the grape assortment, like any other agricultural crop, is a necessary and constant process. Climatic and socio-economic changes in the world are forcing breeders to create more and more complex grape varieties, with a wide range of economically valuable traits and properties. Creating a breeding task is based on the world trends, which the final product (table grape or wine) must meet.

Nowadays, leading viticultural countries work in two main directions: table grape with exclusive taste properties and visual appearance, and wine varieties for producing local wines.

The Ukrainian grape assortment is based on the best introduced varieties and the gradual saturation of simple, highly adaptive, and low-quality hybrids with *Vitis vinifera* genes, which are the main source of a high-quality product. Grape breeding in the NSC «V.Ye. Tairov Institute of Viticulture and Winemaking» resumed after the Great Patriotic War and continues to this day. During this time, thousands of genetic crosses were carried out, hundreds of thousands of seedlings were examined and only 150 varieties and hybrid forms, that are suitable for "Resistance", "Resistance plus Quality" and "Rainbow" step-by-step breeding tasks, were selected. As a result, highly adaptive table and wine varieties with stable quality properties were obtained, for example, early ripening table varieties with large berry size (Arkadia, Flora), late ripening table varieties with dense pulp and tough skin suitable for long-term storage (Zagadka, Tair, Odisei), table varieties and hybrid forms with an exclusive berry shape and skin color (Original, Odesskii souvenir, Shakotis), with the unusual taste of prunes and chocolate (Kometa), white mulberry (Persei), ripe paprika (Lanjeron), etc.

The NSC is also developing the "Kishmish of Ukraine" breeding program to replenish the assortment of seedless grape varieties currently represented by Kishmish tairovskii and Mechta varieties. At the moment, several promising hybrid combinations are being studied.

Wine varieties of the so-called "aromatic" group exhibit flavors of tropical fruits (Yarylo), strawberries and pineapple (Aromatnii), barberry (Odeskyi zhemchuh), etc in wine. Analogs of classic varieties with a rich floral aroma (Zagrei), solanum with berry notes (Rubin tairovskii), etc have been created as well.

Also, in the NSC, the clonal breeding of both ancient varieties (Cabernet Sauvignon, Pinot noir, Pinot gris, Moscato Giallo, etc.) and Ukrainian varieties (Odesskii chernyi, Suholimanski belii, etc.) is performed. During the "Clones of Europe" program, clones of common Austrian, Italian, French and German varieties were studied in different viticultural zones of Ukraine. The best ones were selected by the main properties of productivity and quality.

In the ampelographic collection of our institute, more than 800 varieties of various genetic and geographical origins have been collected. A number of donor varieties of valuable traits and properties have been selected for further breeding.

Today, the department of selection, genetics and ampelography is carrying out a new breeding task called "Ecological grape". The basis for its implementation will be new genotypes of the 6-7 generation of crossing with complex genetic and geographical origins, characterized by high adaptability and productivity. By crossing such complex hybrids, obtained by using several *Vitis* species, which are responsible for different aspects of the variety value, it is possible to obtain single seedlings with a set of traits and properties that meet the breeding task the most. In particular, in addition to high productivity and product quality, the new generation of genotypes should be resistant to main fungal pathogens. The importance of this requirement is justified by the tightening of control over the ecological safety of agricultural products and the preservation of the ecological purity of vineyards. Promising hybrids of the last generations of crossing, even in epiphytotic years, showed

resistance of not less than 6 points at a 9-point scale (where 9 points mean immunity), which will allow them to be used in adaptive, and in the future in biodynamic viticulture.

Keywords: Grape, cross breeding, hybridization, Kishmish Ukraine

Meyve Ağaçlarında Kök Gelişimi Üzerine Humik Asitin Etkileri

Ali Kılıç¹, İbrahim Halil Hatipoğlu¹, Bekir Erol Ak², Birgül Dikmetaş¹, Qutbuddin Yaqubi³

¹Harran Üniversitesi, Fen Bilimleri Enstitüsü, Bahçe Bitkileri Anabilim Dalı, Ş.URFA

²Harran Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri Bölümü, Ş.URFA

³Balkh ,University , Faculty of Agriculture, Department of Plant Science, Balkh,Mazer-e-Sherif, Afghanistan

Corresponding author: yaqubi066@gmail.com

ÖZET

Hümik asitlerin diamonyum fosfat ve kimyasal gübrelerden daha iyi performans gösterdiği, bitkide kurağa ve soğuğa toleransı artırdığı, hastalıklara dayanıklılığı artırdığı, bitkide erken yaşlanmayı önlediği, verimi artırdığı, ayrıca besin maddelerinin alınımını artırdığı bildirilmektedir. Toprakta bulunan iz elementleri, potasyum, fosfor, azot, demir ve çinko gibi besinlerin bitkiler tarafından yüksek düzeyde emilimini sağladığı, bitki gelişiminde gerekli olan mineraller bakımından zengin olduğu, toprağın zehirli, kirletici ve zararlı maddelerden temizlenmesine yardımcı olduğu bildirilmiştir. Son yıllardaki çalışmalar hümik asidin çeşitli bitkilerin büyüme ve gelişmeleri yanında susuzluk, tuzluluk gibi stres faktörleri, toksik miktarlardaki elementlerin olumsuz etkilerinin giderilmesi üzerine yoğunlaşmıştır. Yapılan araştırmalarda hümik maddelerin tohumun çimlenmesini, kök çıkışını, gövde gelişimini artırdığı, kimi makro ve mikro besin elementlerinin alınımını ve bitki içerisinde taşınmasını teşvik ettiği ve bitkilerde büyüme hormonlarına benzer davranışlar sergileyebildiği bildirilmektedir. Topraktaki iyon değişimi kapasitesini yüksek seviyeye çıkardığı, toprak parçacıklarını tuttuğu, bitkinin alamadığı besin maddelerini serbest hale getirerek, bitki tarafından kullanılmasını sağladığı bildirilmiştir. Hücre bölünmesini hızlandırarak, bitkilerin gelişmesine ve hızla büyümesine yardımcı olmakta, kök gelişimini hızlandırmakta, kök sayısı ve yan kök sayısını artırarak su ve besin maddelerinin alınımını kolaylaştırmaktadır. Yapraktan hümik asit uygulamalarının bitki gelişimini olumlu yönde etkilediği, kök uzunluğunu artırdığı farklı bitkilerde, hümik asidin düşük düzeylerinin (0.6-60 ppm) bitki gelişimini olumlu, yüksek miktardaki hümik asidin ise olumsuz etkide bulunduğu), hümik ve fulvik asitlerin hormon benzeri aktivitelere yol açtığı belirtilmektedir. Makro ve mikro besin elementlerinin alınımının artmasının yanı sıra, solunum, fotosentez, protein ve nükleik asit sentezi üzerine teşvik edici etkisinin olduğu ve hücre zarının ve tonoplastın H⁺-ATPaz aktivitesini düzenlediği bildirilmiştir. Çalışma kapsamında meyve fidanı yetiştiriciliğinde hümik asidin etkilerini araştıran literatürler taranmıştır.

Anahtar Kelimeler: Hümik asit, meyvecilik, fidan yetiştiriciliği

Effects Of Humic Acid On Root Development Of Fruit Trees

ABSTRACT

It has been reported that humic acids outperform diammonium phosphate and chemical fertilizers, increase the plant's tolerance to drought and cold, increase resistance to diseases, prevent premature aging in the plant, increase yield, and also increase the uptake of nutrients. It has been reported that nutrients such as trace elements, potassium, phosphorus, nitrogen, iron and zinc in the soil provide high levels of absorption by plants, are rich in minerals necessary for plant development, and help clean the soil from toxic, polluting and harmful substances. Studies in recent years have focused on the growth and development of various plants, as well as stress factors such as thirst and salinity, and the elimination of the negative effects of toxic elements. It has been reported in studies that humic substances increase seed

germination, root emergence, stem development, promote the uptake of some macro and micro nutrients and their transport within the plant, and can exhibit behaviors similar to growth hormones in plants. It has been reported that it increases the ion exchange capacity in the soil to a high level, holds the soil particles, frees the nutrients that the plant cannot take, and enables them to be used by the plant. By accelerating cell division, it helps plants to develop and grow rapidly, accelerates root development, increases the number of roots and lateral roots and facilitates the uptake of water and nutrients. In different plants, where foliar application of humic acid positively affects plant development and increases root length, low levels of humic acid (0.6-60 ppm) positively affect plant growth, and high amounts of humic acid negatively affect plant growth, humic and fulvic acids cause hormone-like activities) is indicated. In addition to increasing the intake of macro and micro nutrients, it has been reported that it has an encouraging effect on respiration, photosynthesis, protein and nucleic acid synthesis, and regulates the H⁺-ATPase activity of the cell membrane and tonoplast. Within the scope of the study, the literature investigating the effects of humic acid in fruit sapling cultivation was reviewed.

Keywords: Humic acid, fruit growing, sapling cultivation

***Micromeria fruticosa* subsp. *brachycalyx* Türünün Uçucu Yağ Bileşenleri ve Bitki Besin Element Değerleri**

Osman Gedik¹, Yusuf Ziya Kocabaş², Orçun Çınar³, Ömer Süha Uslu¹

¹Kahramanmaraş Sütçü İmam Üniversitesi, Ziraat Fakültesi, Tarla Bitkileri Bölümü, Kahramanmaraş.

²Kahramanmaraş Sütçü İmam Üniversitesi, Türkoğlu MYO, Tıbbi ve Aromatik Bitkiler Bölümü, Kahramanmaraş.

³Batı Akdeniz Tarımsal Araştırma Enstitüsü, Antalya.

ÖZET

Micromeria türleri genellikle bitki çayı olarak ve soğuk algınlığında halk ilacı olarak kullanılmaktadır. *Micromeria fruticosa* (L.) Druce subsp. *brachycalyx* P. H. Davis, türü Kahramanmaraş florasından doğal olarak yayılış gösterdiği Çimen dağından çiçeklenme döneminde toplanmıştır. Toplanan bitki materyalleri gölgede kurutulmuş ve kuru herba dan 25 gr örnek öğütülmüştür. Öğütülen numune KSÜ Ziraat Fakültesi Tarla Bitkileri Bölümü Tıbbi ve Aromatik bitkiler laboratuvarında Neo-clevenger cihazında 3 saat süre hidrodistilasyon yapılmıştır. *Micromeria fruticosa* subsp. *brachycalyx* türünde uçucu yağ oranı %4 olarak belirlenmiştir. Elde edilen uçucu yağın bileşenleri Batı Akdeniz Tarımsal Araştırma Enstitüsü (BATEM) laboratuvarında GC/MS cihazında, bitki besin elementleri ise KSÜ ÜSKİM laboratuvarında belirlenmiştir. Analiz sonuçlarına göre; *Micromeria fruticosa* subsp. *brachycalyx* türünün uçucu yağında 17 farklı bileşen belirlenmiş olup başlıca bileşen % 78.15 ile pulegone dur. Bu bileşeni %5.56 ile menthone, %3.55 ile isomenthon, %2.55 ile piperitenone ve %2 ile germacrene takip etmektedir. Bitki besin elementlerinden Ca 13840 mg/kg, Mn 57.93 mg/kg, Zn 26.24, Fe 362.65 mg/kg, P 1845 mg/kg, Mg 2794, K 13435 mg/kg ve Cu 12.22 mg/kg olarak belirlenmiştir.

Anahtar Kelimeler: *Micromeria*, Uçucu yağ, bitki besin elementi, taş nanesi

Essential Oil Components and Plant Nutrient Element Values of *Micromeria fruticosa* subsp. *Brachycalyx* Species

ABSTRACT

Micromeria species are generally used as herbal tea and as a folk remedy for colds. *Micromeria fruticosa* (L.) Druce subsp. *brachycalyx* P. H. Davis was collected during flowering period from Çimen Mountain, where it naturally spreads from Kahramanmaraş flora. The collected plant materials were dried in the shade and 25 g samples were ground from the dried herb. The ground sample was hydrodistilled for 3 hours in the Neo-clevenger device in the Medical and Aromatic Plants Laboratory of the Field Crops Department of the Faculty of Agriculture of KSU. *Micromeria fruticosa* subsp. In *Brachycalyx* species, the essential oil rate was determined as 4%. The components of the essential oil obtained were determined in the GC/MS device in the Western Mediterranean Agricultural Research Institute (BATEM) laboratory, and the plant nutrients were determined in the KSÜ ÜSKİM laboratory. According to the analysis results; *Micromeria fruticosa* subsp. 17 different components were determined in the essential oil of *Brachycalyx* species and the main component is pulegone with 78.15 %. This component is followed by menthone with 5.56%, isomenthon with 3.55%, piperitenone with 2.55% and germacrene with 2%. Plant nutrients were determined as Ca 13840 mg/kg, Mn 57.93 mg/kg, Zn 26.24, Fe 362.65 mg/kg, P 1845 mg/kg, Mg 2794, K 13435 mg/kg and Cu 12.22 mg/kg.

Keywords: *Micromeria*, Essential oil, phytonutrient, peppermint

Monitoring Grape Berry Moth (*Lobesia Botrana* Schiff.) In Commercial Vineyards of Ukraine

Yu Klechkovskiy, Katerina Shmatkovskaya

Quarantine station of grape and fruit cultures of plant protection institute NAAS of Ukraine, Odessa

Corresponding author: oskvpk@te.net.ua

ABSTRACT

The three butterfly species found in the vineyards of Ukraine are *Eupoecilia (Clysia) ambiguella* (Hb.), *Lobesia (Polychrosis) botrana* (Schiff.) and *Sparganothis pilleriana* (Den. et Schiff.). According to climatic requirements, *Lobesia* dominates in wine-growing regions south of the Ukraine.

Lobesia can cause considerable losses in yield. With a large number of pests and without protective measures, losses are 60-80%; in some cases, the pest can destroy the all yield. So far, the types of grape wrappers have been made using the conventional insecticides. A targeted control while protecting beneficial organisms is desirable.

During the growing season 2018-2021, using pheromone traps, we studied the dynamics of the pest. In 2018, the flight of the 1st generation began in the 3rd decade of April with duration 27 days; the flight of the second generation began in the 3rd decade of June – 19 days; the flight of the third generation began in the 1st decade of August – 19 days.

A similar trend in the timing of flight and duration was observed in the conditions of 2019 - 2000, with a difference of several days, which was influenced by the meteorological conditions of the growing season.

Under the conditions of 2021, the flight of the 1st generation began in the 1st decade of May, was much longer than in previous years and amounted to 45 days. The flight of the second generation began in the second decade of July with duration 18 days, second generation - 3rd decade of July with duration 30 days.

The pheromone monitoring during 2019-2021, shows that 50-60% of the grape berry moth flight into the first generation, 29.7% - into the second, 14.2% - into the third.

In the conditions of the south of Ukraine, the pest gives three full generations. Further knowledge of its phenology would enable wine growers to decide on an optimal treatment schedule.

Keywords: grape berry moth, monitoring, vineyards

Morphological Diversity Among Apple Genotypes of The Güce (Giresun, Turkey) Region As Revealed By Multivariate Analysis

Orhan KARAKAYA^{1*}

¹ Department of Horticulture, Faculty of Agriculture, Sakarya University of Applied Sciences, Sakarya, Turkey

*Corresponding author: orhankarakaya7@gmail.com

Abstract

The research was conducted to determine of morphological diversity among native apple genotypes grown in Güce (Giresun/Turkey) region by using fruit quality characteristics. In the research was examined twenty-one different apple genotypes. A wide variation was determined in terms of fruit characteristics among the investigated apple genotypes. Fruit weight was detected from 30.53 g (G-6) to 167.69 g (G-19). Fruit diameter was measured from 42.89 mm (G-36) to 81.97 mm (G-19). Flesh firmness was determined from 64.35 N (G-10) to 137.44 (G-19). Soluble solids content was detected from 9.40% (G-1) to 13.20% (G-21). PC1 and PC2 was explained 51.0% of total variation. PC1 was strongly related to fruit diameter, weight and length, stalk cavity width and depth, calyx basin width and depth, seed cavity length, seed weight and stalk length, while PC2 was mainly related to titratable acidity, flesh firmness, seed dimensions. G-2 and G-19 genotypes were clustered in different sub-cluster on the dendrogram. Consequently, the principle component and cluster analysis (PCA) revealed high morphological diversity among native apple genotypes investigated.

Keywords: Apple, genetic resources, fruit weight, flesh firmness, PCA

Morpho-Physiological Features of The Action Of The Drug Ccc 750 On Winter Wheat Plants In Crops

Silvia Secrieru, Antonina Derendovskaia, Dumitru Mihov

State Agricultural University of Moldova, Faculty of Agronomy, Department of "Agronomy and Environment", Chisinau, RM

s.secrieru.md@gmail.com, antoninad@rambler.ru, mihovdmytrii@gmail.com

ABSTRACT

The retardants preparations on cereal crops prevent lodging, help to level the height of productive stems, ensure their simultaneous ripening and affect the crop yield.

The aim of the research was to study the effect of CCC 750 on the parameters of growth, photosynthetic activity and productivity of winter wheat in the conditions of the south of the Republic of Moldova. The drug is a growth regulator of the retardant type, the active substance of which is chlormequat chloride, in the concentration -750 g/l.

The studies were carried out under the conditions of a field production experiment on sowing of winter wheat of the Kuyalnik variety of intensive type in the SRL "Terra-Vitis" of the Cahul region, on an area of more than 200 hectares. The period of application of the drug is the middle of tillering before the appearance of the first internode (stage 25-31). The consumption of the preparation is 1liter per 250liters of water per hectare. Control - without treatment of crops. The predecessor is winter rapeseed.

In the main phases of ontogenesis exit into the tube and formation of an ear, determined the parameters of growth and photosynthetic activity of winter wheat plants of the Kuyalnik variety, at the end of the growing season - the elements of productivity and yield. We found that the use of the retardant type CCC 750 on winter wheat crops leads to a change in the growth parameters of shoots and leaf surface. So, in the heading phase, the height of the plants, the length of the stem change insignificantly, they are at the control level. A feature of the drug is an increase in the thickness of the stem by 1.3 times and the leaf surface area up to 2 times, compared with the control.

Under the influence of the retardant type growth regulator, the photosynthetic activity of plants is enhanced. In the assimilation organs (leaves, shoots with sheaths of leaves and ears), the concentration of plastid pigments, chlorophylls a, b and carotenoids increases. The level of chlorophylls increases 1.5-1.6 times, carotenoids - 1.2 times. The total content of green pigments (chl.a + b) in plants increases up to two times, is 5.44 mg / plant (control - 2.62 mg / plant). Biomass accumulates in plant organs. The level of raw and absolutely dry biomass increases and the contribution of individual organs to its accumulation changes. In the total biomass, in comparison with the control, the proportion of leaves, shoots with leaf sheaths increases by 1.5 times, ears - by 1.4 times.

The use of CCC 750 on winter wheat crops of the Kuyalnik variety leads to an increase in the number of large and medium ears by 1.2 times and a decrease in small ones. In ears of large and medium sizes, an increase in indicators of productivity elements is observed - spike weight, grain weight in an ear and the number of grains in them by 1.1-1.2 times. The yield is 58.7 c/ ha, exceeds the control by 4.8 c/ha.

Keywords: Winter wheat, Variety Kuyalnik, Growth, Photosynthetic activity, Chlorophyll, Productivity

Obtaining Nano-Sized Complexes of Juglone Inclusion with Cyclodextrins as Potential Plant Protection Agents

Natalia Sucman^{1,2}, Timur Andrusenco¹, Fliur Macaev^{1*}

¹Laboratory of Organic Synthesis, Institute of Chemistry, Chisinau, Moldova

²Comrat State University, Comrat, Moldova

*flmacaev@gmail.com

ABSTRACT

The main problem associated with the expansion of the use of plant protection products is environmental pollution and their impact on human health and other living organisms. For this reason, organic agriculture has recently become especially popular in the world. Now, organic standards are designed in such a way to allow the use only of naturally occurring substances while prohibiting or strictly limiting synthetic compounds. One of such natural compounds is juglone (5-hydroxy-1,4-naphthalenedione). This substance occurs naturally in the leaves, roots, husks, fruit, and bark of plants in the *Juglandaceae* family, and is toxic or growth-stunting to many types of plants. It is highly toxic to many insect herbivores too. However, this compound has a rather low solubility in water, which impairs its bioavailability and complicates its use in practice. One of the strategies to minimize these risks is the obtaining of nanosized host-guest inclusion complexes of juglone with cyclic molecules cyclodextrins. With a hydrophobic interior and hydrophilic exterior, cyclodextrins form complexes with hydrophobic compounds. They have been applied even for the delivery of a variety of drugs. The use of such complexes in agriculture will also lead to a controlled release of bioactive substances into the environment.

In this work methods of obtaining cyclodextrins particles loaded with Juglone and their properties will be described.

Key words: Juglone, β -cyclodextrin, (2-Hidroxiopropil) - β -cyclodextrin, nano-sized.

Photosynthetic Activity of Merlot clone 348 in the Conditions of ATU Gagauzia

Serghei Cara

Agro-Technological Faculty, Comrat State University, Comrat, Republic of Moldova
e-mail: sergey.kara@kdu.md

ABSTRACT

In recent years, in the ATU Gagauzia (Republic of Moldova), the mass introduction of a number of certified virus-free clones of classic European varieties into the assortment has received special scientific and industrial interest. The main planting of the vineyards is carried out with the planting material of these clones. However, the physiological characteristics of growth, photosynthetic activity and productivity of European clones of grapes in the conditions of ATU Gagauzia have not been sufficiently studied.

In this regard, it becomes relevant to study the type of supports, the shape of the bushes, the growth management system in the cultivation of European clones and the development of scientific foundations for these agricultural practices associated with the enhancement of the photosynthetic activity of the leaf surface and the biological productivity of shoots and bushes.

This article explored the morphological and physiological parameters of growth of the leaf area surface grapes variety Merlot clone 348, conditions in ATU Gagauzia (Republic of Moldova), at different ways of doing growth of bushes (the hanging and vertical).

In order to establish the basic patterns of development of annual shoots, we studied the introduced clone 348 of the Merlot variety for the number of shoots, the development of linear growth, the diameter of the shoots, and the development of the volume of growth in the phases of the growing season.

It was found that the number of shoots in clone 348 of the Merlot variety varied from 23.1 to 26.1 pcs/bush with an average of 40 leaves, the length of the one-year growth is 79541 m/ha, the volume of the bush growth is 1.474 dm³, the area of leaf blades is 218.2 cm².

The content of plastid pigments, their ratio and state, the dynamics of chlorophylls and carotenoids in leaves are important indicators of the photosynthetic activity of plants. The concentration of chlorophyll a is 7.441, chlorophyll b - 4.266; chlorophyll a + b - 11.707 and carotenoids - 2.461 mg/g absolutely dry matter.

The average number of bunches in clone 348 of the Merlot variety is 40.1 pcs/bush, the average bunch weight is 133.1 g, the yield is 5.34 kg/bush or 129.4 c/ha. Mass concentration of sugars 210 g/dm³, titratable acids 9.8 g/dm³.

Key words: ATU Gagauzia, bush, carotenoid, chlorophyll, clone, grapes, leaves, Merlot, photosynthesis, shoots, variety.

Physico-Chemical Properties of Honey and Sunflower Flowers of Various Soil and Climatic Zones of The Republic Of Moldova

¹Eremia N., ²Kosheleva O., ²Neicovcena I., ³Makaev F.

¹Agricultural State University of Moldova

²Comrat State University

³Institute of Chemistry, Republic of Moldova

eremia.nicolae@gmail.com

ABSTRACT

The production of high quality ecofriendly beekeeping products is becoming more and more problematic with the continuing intensity of technogenic pollution. The purpose of this study is to study the physico-chemical properties, the presence of amino acids, micro- and macronutrients and heavy metals in honey and sunflower flowers. The object of the study was presented by samples of honey and sunflower flowers collected from various soil and climatic zones of the Republic of Moldova. Water content, invert sugar and sucrose, diastase number, oxymethylfurfural content and total acidity in the honey samples were determined accordingly to GOST 19792-2001. The content of micro- and macroelements and the presence of heavy metals were measured by atomic absorption spectrometry at the Institute of Chemistry, ASM. Analysis of amino acid content was carried out by ion-exchange liquid chromatography on an AAA T 339M amino acid analyzer.

It was identified that the fraction of total water mass in sunflower honey averaged 17.5% with a variation of 16.2-18.2%, invert sugar - 76.5% (76.5-80.0%), sucrose - 2.22% (1.87-3.25%), diastase number - 17.22 Gote units (11.19-24.29 units), oxymethylfurfural - 3.65 mg/kg, (1.92-3.94 mg/kg) and total acidity - 2.52 cm³ NaOH in (milliequivalents) per 100 g of honey (2.08-2.73 cm³ NaOH solution per 100 g of honey).

It was found that the total amount of microelements in sunflower honey was on average 8.83 mg/kg (8.14-10.12 mg/kg), in flowers - 144.2 mg/kg (100.25-225, 55 mg/kg) and macronutrients - 1347.0 mg/kg (672.3-2347.96 mg/kg); in flowers - 39521.2 mg/kg (34416.2-48869.3 mg/kg). It is impacted by soil and climatic zones where it was collected. The amount of lead and cadmium in sunflower honey and in flowers was determined to have a content of <0.5 and <0.06 mg/kg irrespective of the collection location, and the Zinc content in honey was on average 0.98 mg/kg (0.68-1.65 mg/kg) and Copper - 1.10 mg/kg (<0.8-1.49 mg/kg); Zn amount in flowers was 32.9 mg/kg (29.2-36.8 mg/kg) and Cu - 12.7 mg/kg (11.6-14.0 mg/kg) respectively.

Ash content in honey was on average 0.23% (0.17-0.29%), and in flowers - 7.27% (5.62-9.64%). It was found that the total amount of amino acids in sunflower honey had an average of 2.207 mg/g. Proline is the most abundant of the amino acids, averaging 0.578 mg/g or 26.19% of the entire amount, glutamic acid 0.030 mg/g or 11.19%, and asparagic acid 0.231 mg/g or 10.47%. On average, taurine amounts to 8.20%, serine to 4.22%, alanine to 3.90%, lysine to 3.40%, threonine to 3.22%, cysteic acid to 3.12%, phenylalanine to 3.08%, glycine to 2.72%, valine to 2.54%, leucine to 2.40%, arginine to 1.81% and isoleucine - 1.77% of the total amount. The amount of essential amino acids in sunflower honey was on average 0.447 mg/g, substitutable - 1.426 mg/g, immunoactive - 0.914 mg/g, glycogenic - 0.902 mg/g, ketogenic - 0.244 mg/g, proteinogenic - 1.873 mg/g and sulfuric - 0.280 mg/g. The sum of total amino acids in sunflower flowers was on average 21.713 mg/g. The following amino acids were found in the highest amounts: glutamic acid - 16.62% of the total amount, proline - 11.51% and asparagine acid - 11.27%. The following acids are in average amount: alanine 6.95%, serine 6.42%, lysine 6.11%, glycine 5.85%, threonine 5.84%, valine 5.63%, leucine 5.45%, phenylalanine 4.51%, arginine 2.97%, tyrosine 2.58%, histidine 2.36%, isoleucine 1.46%, methionine 1.22%, cysteine 1.11% of total.

Keywords: sunflower honey, flowers, micro-, macronutrients, heavy metals, amino acids.

Results Of Production Tests of New Mycotoxins Adsorbents by The Method of Mathematical Experiment Planning in Postnatal Ontogenesis of Broiler Chickens

Kapitonova Elena

UO «Vitebsk State Academy of Veterinary Medicine», Republic of Belarus
kapitonovalena1110@mail.ru

ABSTRACT

Currently, mycotoxicoses prevention in farm animals, including poultry, is an urgent problem. One of the effective methods of preventing the negative effects of mycotoxins is the use of various adsorbents in compound feeds, for preventive purposes. We have developed and patented feed additives mycotoxins adsorbents “Mekasorb” and “Belasorb” based on tripoli. In laboratory experiments we have established the optimal rates for the introduction of feed additives mycotoxins adsorbents in broiler chickens diets. The article presents the results of production tests of the adsorbents “MeKaSorb” and “Belasorb” effect on the performance indices of broiler chickens in postnatal ontogenesis. The scheme of the experiment was calculated by the method of mathematical planning of the experiment in animal husbandry. Based on the conducted studies it was found that the most effective rate for the complex introduction of mycotoxins adsorbents into the broiler chickens diet is the combination used in poultry house No. 103 (group 1) – 1.5% “Belasorb” + 0.5% “MeKaSorb”. This made it possible to increase: broilers live weight – by 3.31-5.04%, livestock safety – by 1.7-3.9%, gutted carcasses weight – by 4.74-3.32%, with a decrease in feed consumption per 1 kg of live weight increase in broilers – by 0.03-0.05 kg.

Key words: broiler chickens, adsorbents, live weight, safety, feed consumption, slaughter yield, grade of carcasses.

Study Of Various Forms of Management of Grape Bushes on A Modernized Trellis of The Pinot Blanc R7 Variety

Botnarenko A., Rapcha M., Antoch A., Kornya V., Kravets N.

Public Institution Scientific-Practical Institute Of Horticulture And Food Technologies, Republic Of Moldova

*Corresponding author: mihail.rapcea@mail.ru

ABSTRACT

Stringent problem in viticulture is the development of perspective technologies, based on the modernization of the trellis, the improvement of the hull formation system, adapted to the technical and technological requirements of complex mechanization. The technology of cultivation of grapes in the Republic of Moldova provides for three systems of bushes management:

- culture system with a high stem;
- mixed system with combined forms;
- surface forms of the bush.

Studies have shown that the main disadvantages, especially with vertical placement of shoots, are insignificant occupancy of the planting area with an assimilation surface (20-25%) as well as the density of leaves ($5.5-12\text{m}^2/\text{m}^3$) in the space occupied by a trellis, which leads to a multiple increase the effect of thickening the crown with shoots and to limiting the access of solar radiation to the inner zone of the leaf cover.

The agrotechnical methods that most strongly affect the vital activity of a grape plant include the formation of bushes, pruning and the method of growth. With the help of these agricultural methods, the grape bush is given a certain configuration that is most beneficial for the assimilation of the photosynthetically active radiation (PAR) falling on the plants, and it becomes possible to use extensive mechanization for the care of vineyards. As noted by N.D. Perstnev (2014), the level of PAR use largely depends on the type of supports, the shape of the bushes, sunlight and its duration. In this regard, the improvement of the technology of managing non-covering high-stemmed vineyards was carried out in the direction of modernizing the trellis, the shape of the bush in order to increase the frost resistance of the plantings while observing the annual optimal load with eyes on the bush when pruning using the biological method. Thus, during the formation of grape bushes with hanging shoots, there are practically no zones of constant shading, which mainly distinguishes them from the shape of a bush with vertical shoot guidance.

The studies carried out have established that the main disadvantages, especially with vertical placement of shoots, are the insignificant occupancy of the planting area with the assimilation surface (20-25%) and the density of the placement of leaves ($5.5-12\text{m}^2/\text{m}^3$) in the space occupied by the trellis, which leads to multiple strengthening the effect of thickening the crown with shoots and limiting the access of solar radiation to the inner zone of the leaf cover.

The agrotechnical methods that most strongly affect the life of a grape plant include the formation of bushes, pruning and the method of growth. With the help of these agricultural methods, the grape bush is given a certain configuration that is most beneficial for the assimilation of the photosynthetically active radiation (PAR) falling on the plants, and it becomes possible to use extensive mechanization for the care of vineyards. As noted by N.D. Perstnev (2014), the level of PAR use largely depends on the type of supports, the shape of the bushes, sunlight and its duration. In this regard, the improvement of the technology of managing non-covering high-stemmed vineyards was carried out in the direction of modernizing the trellis, the shape of the bush in order to increase the frost resistance of the plantings while observing the annual optimal load with eyes on the bush when pruning using the biological method. Thus, during the formation of grape bushes with hanging shoots, there are practically no zones of constant shading, which mainly distinguishes them from the shape of a bush with vertical shoot guidance.

Key words: modernization, trellis, upgrading, system.

Şalak Kayısı Klonlarında Fidan Gelişiminin Belirlenmesi

Berna DOĞRU ÇOKRAN^{1*}, Turan KARADENİZ²

¹Iğdır Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri Bölümü, Iğdır, Türkiye

²Bolu Abant İzzet Baysal Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri Bölümü, Bolu, Türkiye

* berna_dogru@hotmail.com

ÖZET

Bu çalışma, Zerdali anacı üzerine aşılı Şalak kayısı çeşidine ait klonların sürgün gelişim düzeylerini belirlemek amacıyla yürütülmüştür. Şalak kayısı çeşidi Iğdır ve Kars yörelerinde sofralık olarak yetiştirilen bir kayısı çeşididir. Seleksiyon yoluyla belirlenmiş 10 adet klon ve her klondan 20'şer adet, dölleyici olan Teberze çeşidinden de 10 adet aşı zerdali anacı üzerine yapılmıştır. T göz aşılama metodu ile 6 Ağustos 2018 tarihinde aşılınmış fidanlarda, takip eden vejetasyon döneminde farklı klonların fidanlardaki gelişim düzeyleri belirli aralıklarla ölçülerek tespit edilmiştir. Klonların aşılama başarısı % 38.9-% 90 arasında, aşısı tutan bitkilerin fidana dönüşüm oranı ise % 57.1-% 90 arasında bulunurken; Teberze çeşidinde aşı tutma oranı ve fidana dönüşüm oranı % 100 olarak tespit edilmiştir. Seçilen klonlara ait ortalama sürgün boyu 115.45-191.50 cm, Teberze çeşidinde 198.20 cm; ortalama sürgün gövde çapı klonlarda 3.09-5.94 cm, Teberze çeşidinde 4.38 cm olarak saptanmıştır. Fidanlarda tomurcuk patlama tarihlerinin 19 Nisan-21 Mayıs 2019 arasında olduğu belirlenmiştir.

Anahtar Kelimeler: Kayısı, Şalak, Aprikoz, Sürgün, Aşı, Fidan

Determination of Sapling Growth in Şalak Apricot Clones

ABSTRACT

This study was carried out to determine shoot growth levels of Şalak apricot cultivar clones grafted on Zerdali (Wild Apricot) rootstock. Şalak apricot variety is an apricot variety grown for table use in Iğdır and Kars regions. 10 clones determined by selection, 20 of each clone and 10 number from the pollinator Teberze variety, made grafting on rootstock. The growth levels of different clones were determined in the seedlings in the following vegetation period by measuring the seedlings at regular intervals in the seedlings inoculated with the T bud grafting method on August 6, 2018. While the grafting success of the clones is between 38.9-90%, the conversion rate of grafted plants to seedlings is between 57.1-90%; Grafting rate and seedling transformation rate were determined as 100% in Teberze cultivar. Average shoot length of selected clones was 115.45-191.50 cm, in Teberze variety 198.20 cm; mean shoot stem diameter was determined as 3.09-5.94 cm in clones and 4.38 cm in Teberze cultivar. It has been determined that the bud burst dates in the seedlings are between 19 April-21 May 2019.

Keywords: Apricot, Şalak, Aprikoz, Shoot, Graft, Sapling

The Activity of A Mixture of Chitosan, Glycosides And Salicylic Acid Against Plant Diseases

Natalia Sucman*^{1,2}, Serghei Pogrebnoi¹, Fliur Macaev¹

¹Laboratory of Organic Synthesis, Institute of Chemistry, Chisinau, Moldova

²Comrat State University, Comrat, Moldova

*natalia_sucman@yahoo.com

ABSTRACT

In this work will be reported the results of *in vivo* preliminary testing of a mixture of chitosan, glycosides and salicylic acid against plant diseases. The result of the study of the synergistic effect will be shown. It should be noted that all components of the samples are natural compounds, which makes it possible to recommend these mixtures for use in organic farming. So, chitosan is a linear polysaccharide composed of β - D-glucosamine (deacetylated unit) and *N*-acetyl-D-glucosamine (acetylated unit). Chitosan was prepared from chitin, which was isolated from mushrooms, and also extracted from dead bees. Therefore it was carried out with hydrochloric acid for hydrolysis. Stevioside or rebaudioside and salicylic acid were added as an additive to the resulting mixture. The solutions were used to treat tomato seedlings. All developed mixtures showed good antifungal activity when they were used in kind of contact pesticide. The best result was obtained using a sample containing rebaudioside.

Key words: chitin, chitosan, salicylic acid, stevioside, rebaudioside, glycoside, bioactivity.

The Effect of a Pro-Prebiotic Additive on The Quality of Pig Meat

Grosu Natalia, Caisîn Larisa, Vrancean Vasile

Department of Animal Production Management and Agri-Food Safety, State Agrarian University of Moldova,
grosunatali27@gmail.com, larisacais@gmail.com

ABSTRACT

The research undertaken in order to determine the efficacy of the use of additives «Bilaxan», was conducted on growing pigs. To conduct the experiment on the basis of analogies, two groups of clinically healthy pigs, 30 head each, were formed. The first group served as the control group, and received the basic diet; in the fodder for the second group the probiotic «Bilaxan» in quantities of 0,30 kg/ t was added. The supplementation of the mixed fodder with the «Bilaxan» (0,30 kg / t) during the test period under production conditions has positively influenced the average daily gain of the young pigs during all growth periods (prestarter, starter, growing and finisher) respectively by 7.38; 13.72; 10.59 and 8.25%; and the absolute and average daily gain over the whole test period by 7.95 % and 7.30 % higher, with a feed consumption per kg, with weight gain by 7.53 % less compared to the animals in the CG. Compared to CG «Bilaxan» (0.30 kg / t) carcass weight increased by 6.46 %, efficiency at hot slaughter by 5.49 %, and the thickness of the fat layer decreased in the neck region by 10.9 %, the fat layer at the 6-7th thoracic vertebra decreased by 11.1 % and in lumbar region by 6.05 % compared to CG.

Keywords: Pig meat, prebiotics, yield, fat

The Impact of Climate Change on Microclimatic Conditions of Territories with Heterogeneous Underlying Surface in Relation to Vine

Lyashenko Galyna, Buzovska Maryna, Lyashenko Vitalii, Bulaieva Iuliia, Melnyk Ella, Suzdalova Vira, Popova Hanna

National scientific centre «V. Ye. Tairov institute of viticulture and winemaking», Ukraine

Corresponding author: lgv53@ukr.net

ABSTRACT

Currently, most scientists and agricultural practitioners are tending to consider climate change as an obvious fact, which determines the need to develop a strategy for adapting the agricultural industry. The strategy should focus on changes in various elements (factors) of the climate, which determine, at the regional and local levels, the location of various sectors of agriculture, the technology of cultivation of crops, including methods of plantations protection from diseases and pests.

Determination of climate change trends and tendencies, mainly temperature and precipitation, is currently solved using various scenarios that take into account the forecasts of greenhouse gas emissions into the atmosphere depending on the activities of countries and regions, primarily carbon dioxide and methane, development of the mining industry, population growth, etc. According to these scenarios in Ukraine, climatologists have defined projections of changes in the annual values of temperature and precipitation for different regions, and then the data were detailed in the monthly section up to 2050.

In 2016-2020, studies of changes in temperature and precipitation regime in the monthly section were conducted in Tairov Institute, which allowed to evaluate the conditions of frost, heat and humidity in different natural zones of Ukraine in relation to grape varieties with different requirements for heat and humidity, frost resistance.

Taking into account theoretical and practical works of scientists of the Institute on peculiarities of vineyards' placement on territories with heterogeneous underlying surface and regularities of microclimatic variability under their influence, the preliminary assessment of possible changes in optimality of different elements of underlying surface for different grape varieties was carried out. Implementation of the approach was carried out for different locations and grape varieties of base farms Tairovskoe and A.V. Suvorov. In the first farm's area an evaluation was made for: watershed area – varieties Original, Koroleva vinogradnikov (Koenigin der weingaerten); upper part of the slope – Traminer rozovyi (Gewuerztraminer), Arkadia; middle part of the slope – Aligote, Cabernet sauvignon. In the second farm's area an evaluation was made for: watershed area – varieties Muskat tairovskii, Koroleva vinogradnikov, Original; upper part of the slope – Arkadia, Rannii Magaracha, Moldova; middle part of the slope – Odesskii chernyi, Sukholimanskii belyi, Chardonnay.

Key words: climate change scenarios, underlying surface elements, microclimate, grape varieties.

Влияние Изменения Климата На Оценку Микроклиматических Условий На Территориях С Неоднородной Подстилающей Поверхностью Применительно К Винограду

Ляшенко Галина, Бузовская Марина, Булаева Юлия, Мельник Элла,
Суздalова Вера, Попова Анна

В настоящее время большинство ученых и практиков-аграриев склоняются считать изменение климата очевидным фактом, что определяет необходимость разработки стратегии адаптации сельскохозяйственной отрасли к ним. Стратегия должна ориентироваться на изменение различных элементов (факторов) климата, которые определяют размещение различных отраслей сельского хозяйства, технологию возделывания культур, в том числе

методов защиты насаждений от болезней и вредителей, на региональном и локальном уровнях.

Определение тенденции и трендов изменения климата, преимущественно температуры и осадков, в настоящее время решается с использованием различных сценариев, которые учитывают прогнозы выбросов в атмосферу парниковых газов в зависимости от производственной деятельности стран и регионов, прежде всего углекислого газа и метана, развития добывающей отрасли, роста населения и др. По этим сценариям в Украине учеными-климатологами были определены прогнозы (проекции) изменения годовых величин температуры и осадков для разных регионов, а в дальнейшем были детализированы в месячном разрезе до 2050 года.

В ННЦ «ИВиВ им. В.Е. Таирова» в 2016-2020 гг. проведены исследования изменения режима температур и осадков в месячном разрезе, что позволило оценить условия морозоопасности, заморозкоопасности, теплообеспеченности и влагообеспеченности в разных природных зонах Украины применительно к сортам винограда, отличающимися требованиями к теплу и влаге, морозо- и заморозкоустойчивостью.

Учитывая теоретические и практические наработки ученых института по особенностям размещения винограда на территориях с неоднородной подстилающей поверхностью и закономерностям микроклиматической изменчивости под их влиянием, выполнена предварительная оценка возможных изменений оптимальности различных элементов подстилающей поверхности для разных сортов винограда. Реализация подхода осуществлена для территории базовых хозяйств: ОХ «ГП Таировское» и ОХ «ГП им. А.В. Суворова» для различных местоположений и сортов винограда. В первом хозяйстве оценивалась: водораздельное пространство – сорта Оригинал, Королева виноградников; верхняя часть склона – Траминер розовый, Аркадия; средняя часть склона – Алиготе, Каберне Совиньон, во втором хозяйстве соответственно: водораздельное пространство – Мускат таировский, Королева виноградников, Оригинал; верхняя часть склона – Аркадия, Ранний магарача, Молдова; средняя часть склона – Одесский черный, Сухолиманский белый, Шардоне.

Ключевые слова: сценарии изменения климата, элементы подстилающей поверхности, микроклимат, сорта винограда.

The Impact of The Cherry Tree Pruning Period on The Production and Quality of Fruit in An Intensive Cultivation System

Valerian Balan¹, Vasile Şarban¹

State Agricultural University of Moldova, Faculty of Horticulture, Department of Horticulture, valerianbalan@gmail.com, sarbanvasile@gmail.com

ABSTRACT

The study was conducted during the period 2018 to 2020 in the central area of the Republic of Moldova, and was designed to assess the effect of pruning of cherry trees (*Prunus avium L.*) of “Regina” variety, grafted on the Maxima 14 rootstock, during the rest and vegetative phase of plant development. The pruning was done as follows: during the rest period (control group), during the flowering period; after the harvesting (in July) and in early autumn (the first decade of September). The tree pruning influenced the fruit size. From the moment the colour of the cherry skin became pinkish-yellow and the fruit started to ripen and till its maturity, the diameter of the fruit doubled. The pruning carried out in early autumn had a great impact on the reduction of the percentage (1.6-2.9%) of fruit 24 mm and downwards in diameter and the increase of the yield of fruit (18.3-36.1%) 28 mm and upwards in diameter. It is necessary to study the post-harvest and early autumn pruning in order to determine their impact on the fruit quality and size improvement without affecting the crop yield. A long-term study, on the other hand, would be needed to evaluate the impact of pruning on harvest, especially on the weight and the commercial size distribution of the fruit.

Keywords: *Prunus avium L.*, tree pruning, fruit quality, fruit yield

The Influence of Abiotic Factors on The Development and Productivity of Apricot Plantations in The Republic of Moldova

Peșteanu Ananie, Negru Ion

Faculty of Horticulture, State Agrarian University of Moldova Chisinau, Republic of Moldova

ABSTRACT

The main factors that conditioned the spread of apricot culture on a larger scale are the low return temperatures at the end of the rest period and late spring, which affect the generative organs. The aim of the research was to choose apricot varieties more resistant to the low return temperatures in the northern part of the country. The object of the research was the trees of the apricot varieties Spring Blush, Pinkcot, Kyoto and Faralia, grafted on the Mirobalan 29C rootstock. Planting distance was 4.0x2.2 m. The planting of apricot trees was carried out in spring of 2018, but the research was conducted in 2020 year. Trees were trained to a Trident canopy. It was established that the biological characteristics of the variety influence the parameters of trees, the period of onset of phenophases of the generative organs, the period between flowering and maturation of apricot fruit harvest, morphological parameters, shape index, plantation productivity and the redistribution of the fruits in different quality classes. The Kyoto variety had higher resistance to the late return temperatures, which in the conditions of the northern area registered productions of 17.03 t/ha in the third year after planting.

Keywords: Apricot, low temperatures, development, blooming, productivity, quality.

The influence of growth regulators on the stimulation development, fruit setting and productivity of Kordia cherry variety

Peșteanu Ananie, Lozan Andrei

Faculty of Horticulture, State Agrarian University of Moldova, Chisinau, Republic of Moldova

ABSTRACT

Gibberellins play an important role in regulating the process of plant growth and development and are increasingly used successfully in fruit growing. The aim of the research was to establish the effect of growth regulator, on setting of ovaries in the crown, enhancing growth and morphogenetic processes, increasing yields and maintaining physiological balance in crown of trees. The experimental plot is placed in the orchard "Agroparc Management" Ltd. founded in 2015. The study subject of the experience was Kordia cherry variety grafted on MaxMa 14. The trees were trained as vogel central leader systems. The distance of plantation is 5.0 x 3.0 m. The tested gibberellic acid was GA₄₊₇, product Gibbera, SL. To study the influence of the treatment on fruit setting ovaries and fructification of Kordia variety, four variants were experimented: 1. Control – no treatment; 2. Gibbera, SL – 0.25 l/ha; 3. Gibbera, SL – 0.50 l/ha; 4. Gibbera, SL – 0.75 l/ha. We demonstrated that Gibbera, SL product may be included in the technologic system to stimulate fruit formation, productivity and maintaining physiological balance in crown of trees to administered in the dose 0,25 - 0.5 l/ha, up to 3 times, starting from petal fall stage and continuing intervals of 7-10 days.

Keywords: Cherry, gibberellic acid, growth regulator, development, fruit setting, productivity.

The Influence of Postharvest Calcium Application in Hydro-Cooling Water on Physiological and Biochemical Parameters of Sweet Cherries of Kordia and Regina Varieties

Lozan Andrei

Faculty of Horticulture, State Agrarian University of Moldova, Chisinau, Republic of Moldova

ABSTRACT

The short harvesting season together with the soft texture, limit the availability of high quality sweet cherries on the market for longer period. In order to have high quality fruits, it should be applied by farmers in the orchard, but has a higher absorption rate while application in the postharvest hydro-cooling water. The aim of following study was to investigate the influence of calcium chloride (CaCl_2) added to hydro-cooling water on physiological and biochemical parameters of Kordia and Regina sweet cherry varieties. The research was carried out in 2020. The tested CaCl_2 concentration in water at 0°C was 0,2%; 0,5%; 1,0% and 2,0% where the sweet cherries were immersed during 5 min. After hydro-cooling, fruits were stored in modified atmosphere packages produced by Stepac, Israel for 2 and 4 weeks. It was established the gases and atmosphere balances in packages and the organoleptic, physiological and biochemical parameters of fruits. The increase of Ca content in hydro-cooling water in comparison to control showed improvements in weight stability, acidity, firmness, soluble solid content and vitamin C with the best results at 0,5% and 1,0% CaCl_2 content. Pedicel browning was reduced by CaCl_2 at 0,2% and 0,5%, but presented higher effect at 1,0% and 2,0%.

Keywords: sweet cherry, postharvest, hydro-cooling, calcium, shelf life, quality, pedicel browning

The Productivity and Quality of New Apple Varieties Depending on The Biological Characteristics of The Variety in The Conditions of The Republic of Moldova

Inna Bilici, Petru Balan

State Agricultural University of Moldova, Faculty of Horticulture, Department of Horticulture,
biliciinna@gmail.com, balanpetru@mail.ru

ABSTRACT

This paper deals with new apple varieties grown in the Republic of Moldova, namely in the experimental orchards of the Elite Fruit Ltd and the Spica-N Agro Farm Cooperative. A continuous increase of efficiency in modern cropping systems, i.e. early fruiting and short exploitation time, can be achieved by introducing highly productive varieties from the world collection and knowing the natural potential of a horticultural zone and the cultivation technology. The Granny Smith, Gala Delicious, Gala Buckeye Simmons, Golden Delicious, Golden Delicious Reinders, Red Velox and Fuji Kiku apple varieties, grafted on the M9 rootstock and used in high-density orchards, which are cultivated in the central region of the Republic of Moldova, were studied. High emphasis has been placed on the promotion of new varieties and sustainable cultivation systems that produce qualitative and healthy fruit in areas where the climate, soil and biocenosis correspond to the requirements of the cultivated species, and that are highly efficient economically as well.

Key words: apple variety, harvest, fruit quality.

Variation in Total Phenolic and Antioxidant Properties of Selected Medicinal Plants of Lamiaceae Family

Gülsüm Yıldız, Mahmut Çamlıca

Department of Field Crops, Faculty of Agriculture, Bolu Abant İzzet Baysal University, 14280, Bolu, Turkey

ABSTRACT

Lamiaceae family is one of the major sources of medicinal plants all over the World, and have many phytochemicals which are potential sources of natural antioxidants, e.g. phenolic diterpenes, flavonoids, tannins and phenolic acids, and are used as food flavorings, vegetables and in industry.

In this study, the herbs of sage, rosamary, medicinal lavender and peppermint were analysed after drying to determine their antioxidant activity and content of total phenolics and flavonoids. While the highest content of DPPH was determined in sage, the highest antioxidant activity was obtained from mixed extract with FRAP methods. Lavender has the highest phenolic content and sage has the highest flavonoid content. These plants, especially sage and lavender extracts are a good potential for anti-oxidant activity and can be used in preserving foods.

Key words: *Labiatae*, DPPH, FRAP, total phenolic

Sustainability of Natural and Cultural Landscape

İbrahim Halil HATİPOĞLU¹

¹Harran Üniversitesi, Fen Bilimleri Enstitüsü, Bahçe Bitkileri Anabilim Dalı

ABSTRACT

The Covid-19 pandemic, which emerged with the year 2020, made us question the importance of natural resources. Natural and cultural heritages that are part of the landscape; They are tangible and intangible assets that are related to the past of a society, identify it, and have local and universal values that have survived to the present day with vital continuity. In this context, the deterioration or destruction of any part of the cultural and natural heritage constitutes impoverishment for the heritage of all world nations. For this reason, the importance of natural and cultural heritage, which is the common value of humanity, should be understood and protected. Therefore, when examining these concepts, the concept of 'sustainability' and its components must be known. In this context, basic terms related to these two concepts have been introduced. As a result, these effects on the physical and biological environment; In this period, when human beings threaten the sustainability of resources by causing environmental problems such as soil, air and water pollution, and the destruction of the natural and cultural environment; Realizing the danger, it should start to reconsider the relationship between human and environment-education in order to create sustainable living spaces by considering environmental concerns.

Keywords: Natural Landscape, Natural and Cultural Heritage, Cultural Landscape, Sustainability

Doğal ve Kültürel Peyzajların Sürdürülebilirliği

ÖZET

2020 yılı ile ortaya çıkan Covid-19 pandemisi doğal kaynakların önemini sorgulamamızı sağlamıştır. Peyzajın bir parçası olan doğal ve kültürel miraslar; bir toplumun geçmişi ile ilgili, onu kimliklendiren, yaşamsal süreklilikle birlikte günümüze ulaşan yerel ve evrensel değer niteliği taşıyan somut ve somut olmayan varlıklardır. Bu bağlamda kültürel ve doğal mirasın herhangi bir parçasının bozulması veya yok olması, bütün dünya milletlerinin mirası için yoksullaşma teşkil eder. Bu nedenle insanlığın ortak değeri olan doğal ve kültürel mirasların önemini kavranmalı ve korunması sağlanmalıdır. Dolayısıyla bu kavramlar irdelenirken 'sürdürülebilirlik' olgusu ve bileşenleri mutlaka bilinmelidir. Bu kapsamda bu iki kavram ile ilgili temel terimler ortaya konmuştur. Sonuç olarak, fiziksel ve biyolojik çevre üzerindeki bahsedilen bu etkiler; toprak, hava, su kirliliği gibi çevre sorunlarına, doğal ve kültürel çevrenin tahribatına yol açarak kaynakların sürdürülebilirliğini tehdit etmekte olduğu bu dönemde insanoğlu; tehlikeyi fark ederek çevre bilimle ilgili kaygıları gözeterek, sürdürülebilir yaşam alanları oluşturmak için insan ve çevre-egitim ilişkisini yeniden gözden geçirmeye başlamalıdır.

Anahtar Kelimeler: Doğal Peyzaj, Doğal ve Kültürel Miras, Kültürel Peyzaj, Sürdürülebilirlik

Rooting of Cuttings of Some *Rosa* L. Taxa with Different Concentrations of IBA Applications

İbrahim Halil HATIPOĞLU¹

¹Harran Üniversitesi, Fen Bilimleri Enstitüsü, Bahçe Bitkileri Anabilim Dalı

ABSTRACT

This study was conducted in 2020-2021. In the study, semi-wood cuttings belonging to 7 different *Rosa* L. taxa (*Rosa* × *odorata* (Andrews) Sweet cv. ‘Louis XIV’, *R. chinensis* Jacq. Viridiflora, *R. canina* L. cv ‘Yıldız’, *R. pisiformis* (Christ) D., *R. rugosa* Thunb., *R. banksiae* W. T. Aiton Alba and *R. alba* L.) obtained from various locations were used. In order to determine the reproduction possibilities of different *Rosa* L. taxa with semi-wood cuttings, cuttings belonging to 7 different taxa were obtained by cutting from 15-20 cm length in the last week of August and the first week of September. Cuttings were planted in the growing medium in the fogging unit by applying 0, 1000 and 2000 ppm Indole Butyric Acid (IBA). Rooting rate, root number and root length were determined by removing the cuttings kept in the rooting medium for two months. At the end of the research, the highest rooting rate was obtained from 2000 ppm IBA application in *R. banksiae* Alba taxa, and the lowest rooting was obtained from 2000 ppm IBA application in *R. rugosa* species. While the longest roots were obtained from 2000 ppm IBA application in *R. chinensis* Viridiflora taxa, the shortest roots were obtained from 1000 ppm IBA application in *R. rugosa* taxa. On the other hand, when the average values of all taxa are taken into account, the most appropriate IBA dose in terms of rooting rate is generally determined as 2000 ppm.

Keywords: *Rosa* L., propagation by cuttings, IBA, rooting

Bazı *Rosa* L. Taksonlarına Ait Çeliklerin Farklı Konsantrasyonlarda IBA Uygulamaları ile Köklendirilmesi

ÖZET

Bu çalışma 2020-2021 yıllarında yürütülmüştür. Çalışmada çeşitli lokasyonlardan temin edilmiş 7 farklı *Rosa* L. (*Rosa* × *odorata* (Andrews) Sweet cv. ‘Louis XIV’, *R. chinensis* Jacq. Viridiflora, *R. canina* L. cv ‘Yıldız’, *R. pisiformis* (Christ) D., *R. rugosa* Thunb., *R. banksiae* W. T. Aiton Alba ve *R. alba* L.) taksonuna ait yarı odun çelikleri kullanılmıştır. Farklı *Rosa* L. taksonlarının yarı-odun çelikleriyle çoğaltılabilme imkanlarının belirlenmesi amacıyla 7 farklı taksona ait çelikler ağustos ayının son haftası ve Eylül ayının ilk haftasında 15-20 cm boyundan kesilerek temin edilmiştir. Çelikler 0, 1000 ve 2000 ppm İndol Butirik Asit (IBA) uygulanarak sisleme ünitesinde yetiştirme ortamına dikilmiştir. Köklenme ortamında iki ay süre ile tutulan çelikler sökülerek köklenme oranı, kök sayısı, kök uzunluğu belirlenmiştir. Araştırma sonunda en yüksek köklenme oranı *R. banksiae* Alba taksonunda 2000 ppm IBA uygulamasından, en düşük köklenme ise *R. rugosa* türünde 2000 ppm IBA uygulamasından elde edilmiştir. En uzun kökler *R. chinensis* Viridiflora taksonunda 2000 ppm IBA uygulamasından elde edilirken, en kısa kökler ise *R. rugosa* taksonunda 1000 ppm IBA uygulamasından elde edilmiştir. Diğer yandan bütün taksonların ortalama değerleri dikkate alındığında, köklenme oranı bakımından en uygun IBA dozu genelde 2000 ppm olarak belirlenirken, bazı türlerde IBA dozunun 1000 ppm’den fazla kullanıldığında köklenmeyi azalttığı gözlemlenmiştir.

Anahtar Kelimeler: *Rosa* L., çelikle çoğaltma, IBA, köklendirme

Zonguldak İli Kilimli ve Çatalağzı Yörelerinde Kestane (*Castanea sativa* Mill.) Seleksiyonu

Huri Balcı^{1*}, Turan Karadeniz², Ümit Serdar³,

Kahramanmaraş Sütçü İmam Üniversitesi, Kahramanmaraş, Türkiye
Bolu Abant İzzet Baysal Üniversitesi, Ziraat Fakültesi Bahçe Bitkileri Bölümü, Bolu, Türkiye
Samsun Ondokuz Mayıs Üniversitesi, Ziraat Fakültesi Bahçe Bitkileri Bölümü, Samsun, Türkiye

ÖZET

Bu çalışma, 2009 ve 2010 yıllarında Zonguldak'ın Kilimli ve Çatalağzı yörelerinde yürütülmüştür. Araştırmada ilçedeki kestaneler içerisinde meyve kalitesi yönünden en üstün özellikte olan genotiplerin seçilmesi amaçlanmıştır. Kilimli' den 35 ve Çatalağzı'ndan 53 olmak üzere toplam 88 genotip değerlendirilmiştir. Kestane genotiplerin değerlendirilmesinde tartılı derecelendirme yöntemi kullanılmıştır.

Bu çalışma sonucunda "Normal Mevsim" özelliği bakımından 67 ZÇ 08, "Erkencilik" bakımından 67 ZÇ 25, "Kestane Hamuru" bakımından 67 ZÇ 10 en yüksek puanı almıştır. Toplam değer puanı bakımından ise 67 ZÇ 10 genotipi birinci olmuş bunu 67 ZÇ 08, 67 ZÇ 34 izlemiştir.

Anahtar Kelimeler: Kestane, Seleksiyon, Zonguldak, Meyve Özellikleri

Chestnut (*Castanea sativa* Mill.) Selection in Kilimli and Çatalağzı Regions of Zonguldak Province

ABSTRACT

This research has been conducted in Kilimli and Çatalağzı districts of Zonguldak province. It was aimed to selected the chesnut (*castanea sativa* Mill.) geno-types have superior nut characteristics. 88 geno-types have been evaluated in both years. The Weighted-rankid method were used to evaluated the chesnut geno-types.

The results showed that genotype 67 ZÇ 10 had the biggest average points, followed by the geno-types 67 ZÇ 08 and 67 ZÇ 34, respectively. The performance of the selected geno-types that showed the highest performance in this study will be determined with in similar conditions in subsequenents trials.

Keywords: Chesnut (*castanea sativa* Mill.), Selection, Zonguldak, Fruit Ceharakteristics.