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1ST INTERNATIONAL GOBEKLITEPE AGRICULTURE CONGRESS

ABSTRACT BOOK

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Preface of Harran University Rector

Agriculture has been feeding people for centuries. Our region, upper Mesopotamia, is an area where agriculture is born. The first agriculture activities have been performed in this region. Göbeklitepe was found in this land, which witnessed an important historical event. Those found here enlightened humanity and will continue to do so. Here people gathered and engaged in agriculture.

In honor of 2019, declared as Göbeklitepe Year by our presedent, **"1st International Göbeklitepe Agricultural Congress (IGAC-2019)"** is organized by Harran University Faculty of Agriculture between 25 to 27 November 2019.

The Southeastern Anatolia Region where the congress will be held has a high agricultural potential of our country. GAP (Southeastern Anatolia Region Project) is the biggest integrated development project of Turkey aiming to achieve the developments in all sectors in the region including agriculture. Therefore, it is very important that such a congress that serves this purpose be organized in our university.

Just as in the Göbeklitepe era, people from different areas and from different regions will meet here again and share their experiences and I hope that this conference will be beneficial for the region, humanity, agriculture and future generations.

Dr. Mehmet Sabri ÇELİK (Prof., Ph.D.)
Harran University Rector

Preface of Agriculture Faculty Dean

The emergence of Göbeklitepe revealed new information about agriculture. Contrary to popular belief, people first came together to fulfill their religious rituals and then they engaged in agriculture to feed their bellies. In addition, the findings obtained were in a way to support the information claiming that agriculture started in Mesopotamia.

Agriculture started in this region and took shape in many civilizations. The soils we are on now are part of the fertile crescent soils in Upper Mesopotamia. We are very happy to host the 1st International Göbeklitepe Agricultural Congress on the occasion of the declaration of 2019 as Göbeklitepe in these lands which have been hosting different civilizations for centuries. It is very exciting for us to discuss agriculture in the center of agriculture.

The importance of agriculture in human life is indisputable. So the importance given to the time spent on agriculture will never go back too much. Agriculture is also the basis of human and human health. Therefore, such organizations are the platforms where scientists from different branches come together to share their experiences and exchange ideas.

In the first Göbeklitepe congress which will be held, agricultural problems in this geography will be discussed and solutions will be put forward. I hope that this meeting where agriculture will be discussed will be fruitful for all participants and the results will make positive contributions for our region, our country and the world.

Dr. Bekir Erol AK (Prof., Ph.D.)
Agriculture Faculty Dean

Preface of Congress Organizing Committee President

The agricultural sector continues to play a crucial role for development, especially in low-income countries where the sector is large both in terms of aggregate income and total labor force.

Agriculture contributes to both income growth and poverty reduction in developingcountries-by generating income and employment in rural areas and providing food at reasonable prices in urban areas. Balancing agriculture and industry is an important-although difficult-dimension of development policy.

There are many challenges related to agriculture. The most important chalange is the need to increase food productivity and production in developing countries, To achieve this, a number of problems need to be addressed: property rights, R&D for seeds and inputs, irrigation, fertilizer, agricultural extension, credit, rural infrastructure, storage, and connection to markets.

Scientific meetings such as “I. International Göbeklitepe Agriculture Congress” have boost the development of region in terms of agricultural sector. I would like to thank everybody who helped the congress succeed.

Dr. Turan BİNİCİ (Prof., Ph.D.)
Congress Organizing Committee President

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A RESEARCH ON POTENTIAL USE OF PRICKLY PEAR (OPUNTIA FICUS INDICA) IN FOOD INDUSTRY

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Abstract

In this study, the nutritional and functional properties of prickly pear and a new product- prickly pear sucuk with pistachio- were re**se**arched. For this aim, prickly pears collected from three different regions of Turkey were processed with different dryers (oven type and industrial type) and the most suitable method and region for production was investigated.

According to the physicochemical results of prickly pear fruits, width, length, weight, total dry matter, brix, total acidity, pH, ascorbic acid and mineral contents and color values of the fruits were found to be statistically significant ($p<0,05$) among different regions. While antioxidant capacity was found to be similar in all regions, total phenolic content of prickly pears was significantly low ($p<0,05$) only in one region. The different drying methods were significantly effected the total acidity, total phenolic content, antioxidant capacity, color and HMF values of the product ($p<0,05$) and it was found that industrial type dryer gave the best results. On the other hand, mineral content of sucuk product was not significantly ($p>0,05$) impacted from different drying techniques. In sensory evaluation, the highest rate for the taste of sucuk samples was obtained from the industrial type dryer.

This study revealed that uncommonly consumed prickly pear which has a high nutritional value could be processed into the value-added products. Because there is a limited number of studies on this fruit, data provided from present study may also contribute to further studies.

Keywords: prickly pear, sucuk, drying

AESTHETIC AND FUNCTIONAL EVALUATION OF ORNAMENTAL PLANTS USED IN URBAN ROAD PLANTING DETERMINATION; CASE OF ATATÜRK BOULEVARD/ÇAYCUMA

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[1]Ankara University

Abstract

The quality and quantity characteristics of urban open green areas are considered as one of the most important factors that reveal the quality of life of the region. In terms of the relationship between human and nature, environmental regulations in cities also have an important place. Environmental regulations plants have colorful flowers, leaves, and fruits as well as visual (aesthetic) features and positive effects on human psychology with the smell, as well as shading, closing bad images, is used for many functional reasons such as containment.

Çaycuma located in the Black Sea which has an important part of plant diversity in Turkey has a warm and temperate climate. Commonly used plant materials in the boulevard; Platanus oreintalis, Magnolia grandiflora, Juniperus horizontalis, Rosa sp., Chamaerops sp., Tagetes erecta, Viola wittrockiana, Euonymus japonica, Buxus sempervirens, Berberis thunbergii, Pyracantha coccinea.

In this study, plant species used in roadside, central refuge and intersections in Atatürk boulevard have been determined and the use of plants about the contribution to open green area and their proper form properties have been evaluated. In the obtained data light; The importance of ornamental plants and the suitability of their use in environmental regulations have been demonstrated and suggestions have been made about the subject.

Keywords: Playgrounds, ornamental plants, aesthetics, functionality, reliability, park, Çaycuma

AN INVESTIGATION ON PRESSURE GIRDLING IN PISTACHIO

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Abstract

Pistachio (P.vera) species and varieties of fruit species in the world and in our country is one of the most important. It is known that its value is increasing every day both economically and nutritionally.In this study, the effects of stem girdling on some characteristics of tree development in pistachio variety were investigated. To ensure the choking effect, specially prepared zinc-belted bracelets were installed and the application of 15 cm from the bottom of the hull to the seven-year-old Pistachio trees before the wake of the application buds were applied. In order to achieve the strangulation effect, the shoots and diameters of the shoots, which started in early May, lasted in the same year, were measure.

As a result of the study, it was determined that the shoots of the trees applied were shortened, thickening, narrowing of the knuckle intervals, annual shoot lengths were shortened and the number of fruit eyes increased in one year shoots, especially on two and three year branches, and the number of stagnant fallings increased again.

Keywords: Pistachio, girdling, belting, development

DIE-BACK OF THE SİİRT CULTIVAR SEEDLINGS USED AS ROOTSTOCK FOR PISTACHIO TREES

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Abstract

Pistacia genus is a member of the Anacardiaceae family and consists of at least eleven species. Seven species, Pistacia vera, P. terebinthus, P. khinjuk, P. atlantica, P. mutica, P. palaestina and P. lentiscus, are present and distributed in different regions of Turkey. Except for P. lentiscus, which is in the shrub form and is a green plant, all other species grown in Turkey can be used as rootstock for pistachio trees. Nowadays, the main pistachio rootstock used in Turkey is P. vera cv. Siirt. The seedling of Siirt cultivar are widely used as a rootstock due to rapid growth, early reach to budding thickness and good budding take. These are desirable characteristics in the rootstock. However, in the last 2 years, it has been observed that the Siirt rootstocks start drying 2 months after the budding. The plants dry up to the ground level together with the bud shoots and form bottom shoots again from the bottom of rootstocks. It is considered that these plant dryings have been caused by high summer temperatures occurred in 2017, 2018 and 2019. When pistachio seedlings budded, strong pruning is done on the grafted plants in our region. In this case, the severely pruned plants are supposed to be unable to withstand the high temperatures and thus dried up. These dryings are less in seedlings that are not severely pruned during the budding.

Keywords: Pistachio, Siirt cultivar, Rootstock, Die-back

COMPARISON OF IRRIGATION SYSTEMS USED IN PISTACHIO FARMING IN THE WORLD

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Abstract

Pistachio is one of the leading plants that develop better adaptation to arid climatic conditions than other cultivation plants. The effect of irrigation on pistachio yield was investigated. It has been reported that the soil depth to be wetted in pistachio is 110-150 cm and that seasonal water consumption should be given 754-803 mm in release irrigation and 415 mm in drop irrigation. The conditions under which the countries engaged in pistachio cultivation in the world are investigated. Although pistachio cultivation is carried out in arid conditions in our country, it has been determined that furrow irrigation and drip irrigation methods are used in recent studies. Although the furrow irrigation method is used as the irrigation system of Iran, which is in the first place in pistachio production in the world, recent studies also show that drip irrigation is used. In the USA, which ranks second in production, it is stated that irrigation is done in all lands where aquaculture is done and mini-spring method is placed in the middle of two trees as irrigation method. In Syria, which has an important place in pistachio production in the world, it is stated that it is made under arid conditions like in our country. In Syria, it is determined that pistachio cultivation is carried out in areas where the precipitation is 200-300 mm and other cultivated plants are more difficult to grow.

Keywords: Pistachio, irrigation, Pistacia vera

COMPARISON OF SOME MORPHOLOGICAL AND PHYSIOLOGICAL PROPERTIES OF ALMOND TREES (FERRAGNES CV.) GRAFTED ON GF-677 CLONAL ROOTSTOCK AND BITTER ALMOND SEEDLING ROOTSTOCK

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Abstract

Almond is one of the most widely cultivated nut fruit species in the world. In Turkey, almond growing has become widespread especially in the last decade and almond production has increased correspondingly. Nevertheless, there are various problems in almond cultivation in Turkey. One of these problems is stem from inaccuracies in rootstock selection. The existing almond orchards in Turkey are predominantly constituted of trees grafted on the rootstock which is described as bitter almond rootstock. Even though this rootstock has some problems such as accuracy to name, lack of characterization and genetic opening it is preferred by the farmers assuming it is better. The aim of this study was comparing two year old trees grafted on bitter almond seedling rootstock and GF-677 clonal rootstock grown in the same orchard in Besni county of Adıyaman Province. Leaf cell membrane damage, SPAD value, leaf temperature and leaf proportional water content values were measured in these trees as well as morphological features such as trunk cross-sectional area, shoot length and shoot thickness. The results showed that significant differences between trees grafted on different rootstocks. SPAD values grafted on GF-677 and seedling rootstock, was measured as 45.5 and 43.5, respectively. Leaf temperature value and leaf cell membrane damage value in trees grafted on GF-677 rootstock was measured as average 1 oC and 6% lower than grafted on seedling rootstock, respectively. It was concluded that GF-677 rootstock is advantageous in terms of temperature and drought tolerances when especially considering physiological parameters.

Keywords: Almond, seedling rootstock, physiology, clonal rootstock, morphology

DESIGN AND SYNTHESIS OF NOVEL BENZOTHIOPHENE DERIVATIVES

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Abstract

Nowdays, a variety of novel organic compounds have been synthesized or isolated from natural plants for the treatment of different diseases including cancer, diabetes and central nervous system. Heterocyclic compounds are the most important of the traditional divisions of organic chemistry. They were used for the new biologically active molecules. Benzothiophene and their derivatives are well known member of heteroaromatic family, they have been used as anti-inflammatory, anti-estrogenic and anti-HIV drug agents.2 In this study, novel carbonyl-substituted-benzothiophene derivatives were synthesized by using electrophilic cyclization reaction and coupling reactions. All synthesized molecules were characterized by spectroscopic methods. The detail results will be present at meeting.

Keywords: Benzothiophene, electrophilic cyclization reactions, biological properties, carbonyl groups

DETERMINATION OF SOME WOODY PLANTS DESIGNING OF PARKS IN SOME CITIES OF NORTHERN IRAQ

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Abstract

The study will conducted in the parks of some cities in Northern Iraq. (Erbil, Sulaymaniyah, Dohuk, and Halabja). during the period from; 1st March 2019 to June 15th, 2019 , for study the types of woody plants used in the design of parks in the Sami Abdul Rahman Park, Minara Park, Shanadar 1 & 2 Parks, Gilkand Park, Hawary Shar Park, Azade Park, Daik Park, Bakhe Gishty, Azade Panorama Park, Mohamad Bekhal Park, Dohuk Dem Park, Halabja Park, Bakhe Gishty, Baran Park, Kubra Hamedpur Park. To find out the types of woody plants, the purpose of cultivation or uses, responsiveness, and success of plants in the site. Plant age or number of years of planting, the stem diameter and plant length and plant health status will be determined.

According to the result when visited to all parks that will be indicated 70 species woody plants, and total numbers of woody plants had (54% trees, 36% shrubs and 10% climbs). Also from all sections that will be 39 families, types of woody plants will be 36 evergreen and 34 deciduous. Through the results and conclusions of the study, we reach the following recommendations to several parties (Recommendations to the planning authorities, Recommendations to the executive parties, Recommendations to the Ministry of Municipalities and the Department of Parks, and Recommendations to the parks managements)

Keywords: Green area, park, woody plant species, Northern Iraq

DETERMINATION OF PHYSICOCHEMICAL AND ELEMENT CONTENTS OF SOME POMEGRANATE CULTIVARS AND GENOTYPES GROWN IN ŞANLIURFA

GÖKHAN AKKUŞ[1], FERHAD MURADOĞLU[1], SİBEL AKKUŞ BİNİCİ[1], İBRAHİM BAŞAK[1]
[1]GAPTEAM

Abstract

Pomegranate (Punica granatum L.) fruits consumption has been increasing in recent years due to it is including bioactive and mineral compounds which have protective effect for human health. Therefore in study was to evaluate physicochemical (fruit weight, width, height, fruit calyx size and diameter, acidity and pH) properties and mineral (K, Mg, Ca, P, Cu, Zn, Fe, B, Na and Mn) contents of nine pomegranate cultivars and genotypes (3 cultivars and 6 wild genotype) collected from pomegranate collection garden at Serince Station at Şanlıurfa. In the study, the average fruit weight of varieties and genotypes was determined as 154.33-509.67 gr, calyx height 10.62-17.29 and diameter of 12.85-19.51 mm and pH contents of 2.87-3.85. Among the main elements in the pomegranate juice, K (395.89 mg / 100g) was found with the highest contents mineral element, followed by P, Mg and Ca respectively. As a results, the pomegranate cultivars and genotypes fruits have potential as good source of mineral element and 01 N 03 and Evci genotypes was found to be important for both fruit properties and mineral contents.

Keywords: Pomegranate, Mıneral element, Sanlıurfa, Genotype

DETERMINATION OF POMOLOGICAL AND CHEMICAL PROPERTIES OF SOME LOCAL POMEGRANATES GENOTYPES IN SANLIURFA REGION

GÖKHAN AKKUŞ[1], FERHAD MURADOĞLU[1], SİBEL AKKUŞ BİNİCİ[1]
[1]GAPTEAM

Abstract

Pomegranate (Punica granatum L.), which is generally consumed as fresh and fruit juice, is a rich source of biochemical and antioxidants. In this study, pomological features such as fruit weight (448,59-278,67 g), fruit height (86.14-85.02 mm), fruit crust thickness (3.49-2.96 mm), calyx height (23.37-27.89 mm), calyx diameter (17.47-17.24 mm), fruit juice volume (263.33-176.66 ml), total grain yield (11.19-12.03 %) and some chemical properties such as soluble solid content 14.9-14.0 and pH 2.80-2.86 of local pomegranate species growing in Sanliurfa (Gülveren karışık and Gülveren sarı kızıl) region have been determined. Gülveren karışık and Gülveren sarı kızıl local pomegranate species have been identified as promising in terms of rehabilitation in an advanced stage and development of pomegranate farming in the region due to having some well chemical and morphological properties.

Keywords: Pomegranate, Pomological Features, Chemical Properties

DEVELOPMENT OF FRUITS AND NUTS AND THEIR CHALLENGES IN AFGHANISTAN

NESAR AHMAD KOHESTANİ[1] BEKİR EROL AK[2]
[1]Kabul University [2]Harran University

Abstract

Afghanistan is a land locked country , As an average 70-80% of the Population is engaged in agriculture, and animal husbandry. Afghanistan is an agricultural country and rich for many fruits. Climate is cold winters and hot summers, Afghanistan is a Mountainous country. Which has a continental climate.

Afghanistan produces some of the world's tastiest fruits and nuts, and these high-value food products are in great demand in international markets. The community is made up of producers from various parts of the country. Among the best-known products are Satar Bayee almonds and yellow figs, large in size and produced organically in small quantities. The figs are picked by hand, flattened and tied with a bamboo cord before being left in the sun to dry, which enhances their sweetness and aromatic qualities. The country's dried apricots are also famous: The Shakerpara variety is one of the sweetest of the 50 native varieties that grow in Afghanistan, while the Ameri is the most celebrated of Afghani apricots, excellent eaten fresh. Raisins are another community resource: Grapes are the most important fruit in Afghani agriculture and 75% of the harvest is dried to make raisins. Shundakhani is the most prized and expensive of the country's 96 grape varieties, and is dried naturally in special rooms called khasmish khana. Besides of mentioned fruits, grape, pomegrante, mulbery, etc. are grown famous fruits in Afghanistan.

Keywords: Afghanistan, dried fruits, pistachio, almond, fig

DEVELOPMENT OF GHALGOZA PINE AND CHALLENGES IN AFGHANISTAN

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Abstract

Afghanistan is an Undeveloping country highly dependent on farming and livestock, The Economy of Afghanistan can be divided into 3 sectors; Agriculture 53%, Industry 29% and Services18%. Total area is 65 million ha , Of the total area only 12% is arable ,Agricultural land 7.8 million ha, Irrigated land 3.3 million ha, Rainfed land 4.5 million ha, Rangeland 30 million ha, Natural forest 2.1 million ha. The main agriculture products are: wheat , fruits, nuts, wool, mutton and etc. Afghanistan is one of the leading producers of dried fruit & nuts in the world and the people have been in this business for generations, infused with their history and culture.

The chilgoza pine (Pinus gerardiana) is registered by the International Union for Conservation of Nature and Natural Resources (IUCN), Red List of Threatened Species, as a Near Threatened species across its range in Afghanistan, China, Pakistan and India. In Afghanistan, the chilgoza pine is considered protected but harvestable. Chilgoza is a top list dry fruit in Afghanistan, every year 27-35 thousand metric tonnes is produced and raw/unprocessed Chilgoza 1 kg sold for 15 dollars across the border on illegal terms and ways. Farmers and traders risking their lives to sell to their Chilgoza, as they don't have a buyer in Afghanistan and if not processed and stored at a specific temperature and Humidity they go rancid, so the Chilgoza is traded through the porous border illegally and sold at a lower price. Farmers are told they will be given the money when their Chilgoza is sold. When sold and processed in Peshawar, Lahore and Pindi, it is then exported under the Pakistani label without specifying the origin of the Chilgoza. It is then exported to China and worldwide. China is number one exporter and Pakistan is second on the list as exporter and producer. A 500-600 Million USD industry is actually run managed by Pakistan. But if processed and packaged in Kabul, the product will increase farmer's revenue by 0.8-1 billion USD and government revenue through taxation to 40-90 Million USD, if traded through legal ways.

Keywords: Afghanistan, Pinus gerardiana, pine, export, chilgoza

DRYING PLUMS GROWN IN SOUTHEASTERN ANATOLIA AND AFFECTS OF DRIED PLUMS ON HUMAN HEALTH

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Abstract

After the beginning of irrigation in Southeast Anatolia Region, researches made in different fruit species revealed that many species and varieties can be grown. One of these fruits is plum. Plum which has an important place in fruit cultivation in our country is consumed as fresh but it has also taken its place in snack market as dried. drying methods will be tried in chemical drying applications.

With the vitamin c it contains, it strengthens the immune system and increases the resistance to diseases. Vitamin A is good for eye health. It is very good for constipation because it has high fiber content and it works the intestines. It has a positive effect on kidneys and diuretic. It is effective on the factors that cause blood clotting with vitamin K. Prune is good for mental fatigue as well as physical benefit. It is a food that people who are on a diet should have in their meals. Plum with low calorie and glycemic index may consume diabetics. It is a good source of calcium and should be consumed by menopausal women.

Keywords: Fruit, drying, plum, health

EFFECT OF LIMITED IRRIGATION ON VEGETATIVE GROWTH AND FRUIT SET IN CHERRY

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Abstract

In recent years the cherry in Turkey has been very important developments. Turkey has rich ecological conditions as a result of early, mid and late season cherry varieties can grow to In our country, especially in parallel with the development of nursery and irrigation opportunities, cherry cultivation is also becoming widespread. In this research, early burlat cherry cultivar, which is the earliest, was controlled irrigation on 9 trees and normal irrigation on 9 trees. Length and diameter measurements of the branches, shoots and shoots of trees, one, two and three years have been done. The amount of water given in normal irrigation is 120,619 m3 and in controlled irrigation is 208,549 m3. When we look at the fruit yield of the first year average 15.66 kg per tree in normal irrigation, average yield per tree in controlled irrigation was 14 kg.

According to obtained results; it was determined that the number of bouquet that provided fruit attitude on the branch was formed in two and three year shoots and at least one year shoots in general and controlled irrigation. Therefore, controlled irrigation has been observed to have a great effect on fruit set.

Keywords: Pistachio, girdling, belting, development

EFFECTS OF DIFFERENT ZINC AND BORON DOSE APPLICATIONS ON TOTAL OIL AND FATTY ACIDS OF OLIVES GROWN AT SOUTHEAST ANATOLIA REGION

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Abstract

Turkey has an important potential about fruit growing. The homeland and gene center of olive and as well as many fruit species is the Region of Southeastern Anatolia as expressed by many researchers. In recent years, as the awareness of the importance of olive oil has increased, so consumption tendency has increased too. Olive oil is the only edible oil that can be consumed without any chemical treatment. Especially in recent years after the intense research results are presented to the world, which prove the unique value of olive oil in terms of healthy nutrition it has gained the appreciation of the conscious consumer and its consumption has increased rapidly.

This study was conducted to determine the effects of micro element fertilization on olive oil and fatty acids. According to the applications, zinc sulfate (ZnSO4.7H2O, 23 % Zn) was used as zinc source and boric acid (H3BO3, 17 % B) was used as boron source. First two years the applications were not started and only yield values determined. After the second year the nutrient applications was started. According to result of the chemical analysis, it was determined that different dozes of foliar Zn and B fertilization have some improvement effect on total oil and fatty acids of olive which have a great importance in human nutrition. In addition, the content of some saturated fatty acids in the fruit, which has harmful effects on human health, is reduced.

Keywords: Sanliurfa, olive, zinc, total oil and fatty acids

EVALUATION OF NEW VARIETIES OF ALMONDS FOR THEIR PROPERTIES AS FUNCTIONAL FOOD AND THEIR USES BY NUTS INDUSTRY

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Abstract

Nuts are rich source of various vitamins and micronutrients which are essential in optimizing health. Among all tree nuts, almonds have been regarded as the epitome of healthy foods because they are a rich source of protein, monounsaturated fatty acids, dietary fiber, vitamin E, riboflavin, and essential minerals as well as phytosterols and polyphenols. All of these nutrients/non-nutrients and other unidentified constituents work together in a synergistic manner to make almonds an ingredient ready for incorporation into functional foods. In present work, six varieties were analyzed aiming to determinate the above-mentioned properties of almonds varieties and which of them could be used in the industry. Raw, blanched, almond nuts of varieties Texas, Feranies, Soleta, Isabelona, Guara and Avijor were analyzed for chemical composition (oil, water, fiber, protein, sugars, ash, alpha-tocopherol, and fatty acids), physical properties (weight, shape, color, and texture). The varieties Texas and Feranies were used as control varieties and their results were explained as a comparative work case.

Keywords: Nuts almond fatty acid protein

EVALUATION OF WOODY SHRUB SPECIES USED IN LANDSCAPE AREAS IN SANLİURFA CITY CENTER IN TERMS OF DESIGN AND PLANNING PRINCIPLE

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Abstract

Landscape architecture; planning, designing, managing, preserving, repairing and controlling all kinds of open spaces with the balance of natural and cultural elements. In this context, landscape works aim to create a more livable environment by producing functional, aesthetic and economic solutions for human beings. The purpose of the use of the area to be designed in landscape planning is important in terms of shaping the design. The main objective of urban landscape planning; the balance of natural and cultural landscape characteristics of the area in the determination of urban development potential. Current city understanding includes concrete, dull, 'natural' elements that have become almost non-existent. The plant material to be used in this context is undoubtedly the most important building elements of landscape planning. The fulfillment of the functions expected from the planned area itself is largely proportional to the good and correct use of plant elements and their commitment to some universal design and planning principles. This study aims to evaluate the woody shrub species used in landscaping areas planned in the city center of Şanlıurfa in terms of design and planning principles. In addition to visual or aesthetic effects such as color, texture, form, plant materials add value to the cities with their effects such as wind curtain, erosion prevention, and climate improvement. Therefore, the bush species used in urban landscape design; shading, screening, sound and wind insulation, to create a border and wall effect, different colors, textures, structure, and fruit with the characteristics of the crown width, the root structure is known to be formed by knowing the correct plant design understanding. In this context, woody shrub species in this area will be determined by survey studies and related literature will be searched and some landscape characteristics will be determined.

Keywords: planning principles ,shrub types , Şanlıurfa

THE EFFECTS OF DIFFERENT DOSES OF SALT AND HUMIC ACID ON PLANT GROWTH, YIELD AND SOME QUALITY CHARACTERISTICS IN TOMATO

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Abstract

In this study, the cultivation, yield, and some quality characteristics of Alsancak F1 tomato cultivars grown in soilless conditions, nutrient content different EC (3 dS/m, 7 dS/m) and humic acid (0 ml, 0.7 ml/l and 1.4 ml/l) doses were investigated. Therewas a decreasement in the content depending on the salt levels, plant height, stem diameter, plant fresh-dry weight, root fresh, root length, total yield, total fruit number, fruit weight, fruitdiameter-length, fruit flesh hardness and fruit flesh thickness. On the otherhand, soluble solid matter were increased at different levels. Humic acid application has been effective in reducing salt stress. Humic acid application has been determined to increase plant height. The longest plants were obtained in 1.4 ml/l application of humic acid, while the shortest plants were obtained from the control group. The thickest stem diameter, HA: 0.7 ml/l, the thinnest stem diameter HA: control, the longest roots HA: 1.4 ml/l, the shortest roots HA: control, maximum root wet weight HA: 1.4 ml/l, the least root wet weight, HA: control, maximum root dry weight HA: 1.4 ml/l, the least root dry weight of the control group was determined. In addition, there was an increase in water-soluble dry matter content. In addition, humic acid had no positive effect on total yield, total fruit number and fruit weight.

Keywords: Tomato (Solanum lycopersicum L.), salt stress, humic acid, yield, quality

FRUIT INDUSTRY RESPONSE TO INCREASING WINTER TEMPERATURE IN MEDITERRANEAN AREA

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Abstract

Global warming is expected to be decreasing the accumulated winter chill across the world's fruit and nut growing regions. Recent works revealed that Mediterranean region is a hotspot for increasing temperature and consequently tree-based socio-ecological systems could be affected. An analysis of the historical chilling trends among the agricultural production zones from the north to the south of Tunisia and their incidence on flowering and fruiting of three typical fruit species (peach, almond and pistachio) were investigated. For each fruit species, flowering date and yield were determined. The historical chilling trends were characterized using different chilling models (0-7.2°C and Crossa-Raynaud as Chilling Hours models, Utah, Modified, Positive Utah Models and Dynamic Model). Notable declines in winter chill from the north to the south were obtained with frequent and cyclic warm year detected every 3-4 years. Positive Utah and Dynamic Models seem to be the most suitable and demonstrate improved outputs compared to other chilling models in warm Mediterranean area. Fruit production appears to be a function of annual chill accumulation. Peach and pistachio were sensitive to warm winter with delayed flowering, and affected yield and fruit quality. Warmest winters delayed the flowering of peach almond and pistachio cultivars by about 7-15 days, 15-20 days and 20-30 days, respectively. Significant negative correlations were obtained between fruit and nut yields and chill accumulation. Peach and pistachio productivity seemed to be severely affected by lack of chilling when its values fall under 700 and 900 PCU, respectively. Almond species expressed less variable behavior with contrasting chill accumulation. The three fruit tree species almond, peach and pistachio and cultivars within each fruit species expressed different flowering and fruiting responses to increasing temperature. Consequently, adoption of appropriate fruit species and cultivar within species could be used as means to adapt for more frequent warm winters and to mitigate the harmful effect of global warming.

Keywords: Climate change, warm winter, fruit species, flowering, fruiting, Mediterranean area

FRUIT PRODUCTION AND PRESENT SITUATION IN AFGHANISTAN

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Abstract

Afghanistan has a long tradition in horticulture and a reputation for high quality produce. Nevertheless, chaos, continuous warfare, and governmental tyranny have destroyed much of its potential. Still it produces about o.93 million tons from an area of o.18 million ha. But low productivity (5.17 t/ha) is mainly attributed due to lack of improved cultivars, assured irrigation, poor soil health, improper pollination management, changing climatic conditions, poor management of pest/pest/diseases, inadequate post harvest management, lack of regulated markets and poor facilities of storage and transportation, further add to the problems. Afghanistan's environmental conditions are highly favourable for many fruit tree crops. Considering the regional reputation for high-quality produce and the expanding global opportunities, horticulture can once again become a source for export earnings. According to a FAO report, three activities important to the Afghan economy are raisins, carpets, and construction materials. Normally the long, seedless kishmish from the Shindoo Khani variety are the most expensive. The round ones are from the Geerduk variety and are not normally as highly priced. However, vineyards may be more profitable by providing incentives such as subsidized credit to producers. It is also a unique center of genetic diversity and of great value to the international horticulture community. Pomegranate, cherry plum, apricot, peach, pear, apple, walnut, pistachio, fig, grape, almond, are among the species present across the country and likely provide a unique array of useful agro-botanical traits.

Keywords: Afghanistan, fruit, ecology, soil, climate, quality, diversity

GRAPE PRODUCTION AND THEIR MAIN PROBLEMS IN NORTH IRAQ

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Abstract

Different grape cultivars are grown mainly in northern Iraq. Modern growing systems are planning to demonstrate farmers and improvement the production and cultivars. Viticulture in north of Iraq assumes an important position in horticultural crop according to its area, production, value addition and job creation in both rustic and urban areas. Among all the horticultural crops, grapes have received a special importance of it is value addition in to raisins.The gapes vints are widlyplanted in Duhok, Erbial , Sulaimaniya and Halabcha governorates, where it grow due to suitable climatic condition and soils. Different varieties belonging to genus (Vitis ViniferaL.).Grape production provides employment and income for hundreds of thousands of families in north Iraq. Different cultivars are growing by farmers. There are more than 100 cultivars of grapes grown in north Iraq including dessert grapes, varieties that are used as table grape or may be dried to give currants and raisin and varieties that can be used for the production of juice and wine. We have a suitable land for these grapes, as a result of the insert of new varieties By the agriculture circles and by some growers, the number of cultivars has increased to more than (100) one hundred cultivars.

Keywords: North Iraq, Grape, Vineyard, ecology, soil, climate

HARVESTING AND POSTHARVESTING OF PISTACHIO IN AFGHANISTAN

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Abstract

Afghanistan Famous Fruits and Nuts , as we know Afghanistan an Agricultural country. Afghanistan is a land locked country , As an average 70-80% of the Population is engaged in agriculture, and animal husbandry. Afghanistan is an agricultural country and rich for many fruits.pistachio is an important nut crops it have an effective ruls in economy of afghanistan Natural forest stands of pistachio trees still cover thousands of hectares in northern Afghanistan. They are all of the Pistacia vera variety which is highly coveted by export markets for its taste and unparalleled rich green color. Pistachio is a dioecious species requiring both male and female trees for fertility. One pistachio accession was recorded by the surveyors as belonging to a monoecious tree (remains of male flowers and nuts found on the same tree). This finding, if confirmed, would be the first ever found in the world and very important for the pistachio industry.

The assessment of horticultural techniques in Afghanistan revealed that farmers would gain added benefits by raising honey bees for more effective pollination and honey production. In many cases, because no fertilizer, irrigation, pesticides are applied, nuts are truly organically produced and their high prices reflect this fact (especially in the Indian market.

Keywords: Pistachio, harvesting, production, Afghanistan

IMPORTANCE AND USE OF MICRO ELEMENTS IN FRUIT GROWING

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Abstract

Nutrient deficiencies seen in plants slow down the growth of plants, in some cases even cause plant deaths. Plants need nutrients, the development continues as long as the amount they need. If the development of the plant is slow and not at the desired level, it means yield and product loss. Plant nutrition is important to minimize losses. In order for plants to develop in a healthy way, nutrients in appropriate amounts and formulations should be used together with fertilizers and given by foliar when necessary from soil. The plant nutrient level should be monitored to prevent any nutritional disorders and necessary precautions should be taken without delay. Fertilization in plants is important in terms of providing nutrient elements needed by the plant to the plant and maintaining the nutrient balance of the plant.

Micro elements are as important as macro elements in fruit growing. Lack or excess of micro elements in the plant adversely affects plant growth. Unless the necessary nutrition is made, the development of the plant will not be at the desired level even if all other cultural processes are done without deficiency. Nutritional disorders not only reduce the yield, but also the deterioration of the quality of the product obtained, and the plant's resistance to disease, extreme cold and heat, and thirst, resulting in reduced resistance. Nutritional deficiency can be caused by the insufficiency of any nutrient or its excess. Although there is sufficient quantity of other nutrients, over a single deficiency of micronutrients to completely stop the development of the plant and may lead to a very large drop in yield. In this study; the importance of microelements, their functions in plants, their functions in plant nutrition, conditions that reduce the uptake of microelements, deficiency symptoms of microelements in plants and redundancy of microelements status are explained.

Keywords: Plant nutrition, Nutrients, Micro element

IN VITRO PROPAGATION ADVANTAGES AND DISADVANTAGES OF ALMOND CULTIVARS AND ROOTSTOCKS

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Abstract

First biotechnological applications in plants, in vitro production of plant cells 'Plant tissue or cell cultures'. Very separate and identical from animal cells The most important point in time, in vitro conditions, a complete plant, a single plant belonging to that plant it is possible to produce from the cell. This feature in plants, organ, tissue and the cell has the ability and genetic information to create a complete plant shows. Propagation of fruit trees geneally were done by seed org rafting. Seed may use to produce for breeding and seedling to make budding on them. That means to produce budded plants. The rootstooks are very important to modern fruit growing system. These rootstocks should be propagated by vegetative methods. Nowadays these are producing by tissue culture.

One of the biggest advantages of tissue culture to the producer is that it provides the required number of plant materials in a short time. Also, in recent years this method is more preferred for some species having proliferation problems in vivo, since the plants obtained by tissue culture will be healthier, genetically the same material selected as breeder and substantially homogeneous. So, some cultivars and especially rootstocks of almond can be propagated in vitro conditions.

Keywords: Almond, propagation, in vitro, Tissue culture, rootstock

INVESTIGATION OF ACTIVE CARBON PRODUCTION FROM ALMOND SHELL AS A BIOMASS SOURCE

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Abstract

Almond cultivation, which has an important place in the world, is becoming widespread in our country. Almond fruit, which is one of the hard-shelled fruit species that are frequently consumed in our country and can be cultivated in many regions, has an increasing potential in recent years, especially in the South East Anatolia Region. The amount of almond shell will increase with increasing almond production in our country. In this study, as a result of using almond husk which is a woody hard material which is obtained as a result of decimation processes from almond fruit by using this increased potential, as a raw material, production of high carbon containing porous structure having high usage value in many fields It is aimed to emphasize that it can contribute more to the economy of the country and that the shell of the almond is as valuable as the renewed interior. At the same time, providing an adsorbent such as activated carbon from domestic sources will contribute to our country's economy. For this purpose, it was seen as a result of literature research that almond husk can be used as a raw material in the production of activated carbon because it is easy to obtain and cheap. In this study, general information about the use of almond hard shell as active carbon in biomass source, general information about almond shell and activated carbon will be given.

Keywords: Activated carbon, Almond peel, Agricultural waste

INVESTIGATION OF STOMA PROPERTIES OF VINEYARD TYPES AND VARIETIES

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Abstract

The number and properties of stomata in leaf surface area in plants are used to evaluate tolerance and sensitivity to abiotic stress. Variations in the number and size of stomata are observed more clearly in the plants grown under drought and physiological drought and help determine the degree of reaction of the plant against stressor. For this purpose, the number of stomata in the leaf surface area of grape species and varieties were examined and evaluated by the researchers. Although there are many methods used to determine the number of stomata in grapes, practical and low-cost methods are preferred. In this study, two different stoma counting methods (mold taking and transparency) are introduced.

Keywords: Stoma counting, Mold taking, Transparency

MOLECULAR REACTIONS OF HORTICULTURAL CROPS IN HEAVY METAL STRESS

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Abstract

Heavy metals are known to be an important stress factor due to their formation from various sources, their long-term effects on the environment and nature, their negative effects on biological systems, their accumulation in living things through the food chain and their negative effects on ecological balance. Heavy metals, which are originated from abiotic stress, cause harm to the plant and affect the quality and quantity of the product negatively. Plants develop many molecular defense mechanisms to reduce or prevent these negative effects. The adaptation and resistance to stress conditions are primarily dependent on the understanding of the stress effects in plants. Nowadays, biotechnology studies that evaluate the molecular responses of plants to stress are attempting to identify genes that may be related to stress. The effect levels of these genes on the different plant are examined, and the transfer of these stress-related target genes is carried out by certain molecular methods in order to obtain resistant plants. In this review, it is aimed to explain the reactions against stress by explaining the molecular events occurring under heavy metal stress conditions in plants and to increase the resources and researches on this subject.

Keywords: Abiotic Stress, Heavy Metal, Horticultural Crops, Molecular

MOLECULAR RESEARCH IN OLIVE PLANTS IN THE WORLD AND TURKEY IN RECENT YEARS

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Abstract

Known as the world's most healthy and natural source of vegetable oil, the history of olives dates back to 10,000 years ago. The homeland of olives, a member of the Oleaceae family, is Upper Mesopotamia and Southern Asia, including Southeastern Anatolia and Syria. Specifying genetic diversity, especially in fruit-bearing trees of economic importance, has been an important research topic for genetic research. Molecular genetics is a genetic sub-branch that examines the structures and functions of genes that are the hereditary material of living things. Molecular markers have been used in many studies to reveal differences in DNA levels. In the past, instead of morphological markers that characterize one plant from another and which can be observed in subsequent generations of the phenotype, it has replaced protein (isoenzyme) markers that can then be observed and monitored at the protein level. However, these two markers are now replaced by DNA-based molecular markers due to their characteristics such as time, labor, cost, efficiency and ease of application. For all the reasons mentioned above, molecular studies are carried out for different purposes in fruit growing.

Keywords: olive, molecular markers, dna

MOLECULAR RESPONSES OF HORTICULTURAL CROPS IN DROUGHT STRESS

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Abstract

Drought is one of the most important abiotic stress factors affecting horticultural growth, development, yield and quality. Identifying candidate genes that play a role in tolerance to drought and elucidating abiotic stress pathways have great importance. When the plant meets the drought conditions, it creates a complex situation within the plant. A number of genes play role under drought stress conditions. These stress-induced genes are not only involved in the production of related proteins. It is also an important factor in the expression of genes that respond to drought stress. Ca2+, ROS, ABA, phosphoglycerol, diacylglycerol and transcriptional regulators are involved in signal transduction. Transcription factors such as bZIP, NF-Y, EAR, MYB, AP2 / ERF, bHLH, NAC, HD ZIP and ZPT2, which regulate gene expression in plants under drought stress, are large families of proteins with specific functions. Apart from transcription factors, ABA-dependent and independent genes are effective in providing tolerance in case of drought stress. It is necessary to use new approaches to understand the response of plants to drought stress and to increase the resistance of plants to stress. In addition, the combination of drought-tolerant wild species and culture varieties provides an advantage in obtaining plants resistant to abiotic stress conditions.

Keywords: drought stress, horticuture, molecular

MORPHOLOGICAL AND PHYSIOLOGICAL REACTIONS OF HORTICULTURAL CROPS IN HEAVY METAL STRESS

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Abstract

In parallel with human activities and industrial development in the world, air, water, and soil pollution is being expanded. The negative impact of heavy metals, an important environmental pollutant, has important effects not only on ecosystem functions but also on human, animal and plant health due to the ecosystem cycle. Plants collect the metals in the air as gaseous by means of stomata on the leaves. Also, they accumulate the heavy metals found in the soil as ions by means of their roots. If heavy metals rise above a certain level in the plant, it causes stress in the plant. Morphological, physiological and biochemical reactions occur in plants under heavy metal stress, such as slowing growth, stomata closure, decreasing of leaf area, photosynthesis and chlorophyll amounts, and increasing of proline and MDA levels. This review, which has been obtained from different studies examining the reactions that occur in plants against heavy metal stress, is aimed to help the studies on horticultural crops.

Keywords: Abiotic Stress, Heavy Metal, Horticultural Crops, Molecular

MORPHOLOGICAL AND PHYSIOLOGICAL RESPONSES OF HORTICULTURAL CROPS UNDER DROUGHT STRESS

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Abstract

Plants response with physiological and metabolic changes in order to sustain their growth and development under abiotic stress conditions such as drought, temperature, salinity and excessive rainfall. Thus, they are least affected by environmental factors when grown in the same climatic conditions for long periods of time. When plants encounter arid conditions, they can restructure their metabolism by changing their life cycle depending on the severity and time of water stress. In this configuration, the plant slows the trunk elongation to reach more water and stimulates root growth. On the other hand, if the drought stress lasts for a long time, both stem and root development cease, leaf area and number of leaves decrease, and even some leaves poured by yellowing . Decrease in plant growth is due to cessation of cell division and expansion of shoot and root meristems. Stopping cell division or expansion is directly related to the decrease in photosynthesis rate due to water deficiency.Finding such defense mechanisms and thus minimizing product losses is extremely important in terms of nutrition and cultivation techniques. For this reason, with the developing technology in recent years, it is aimed to produce stress resistant plant species and to prevent possible nutritional problems in the future.

Keywords: drought stress, horticuture, morphology, phyısology.

EFFECT OF NANOFIBER BARRIER LEAF FERTILIZER, NANOTECNOLOCIAL CALCITE AND KAOLIN APPLICATIONS ON YIELD AND SOME QUALITY CHARACTERISTICS OF PISTACHIO

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Abstract

In this study, the effects of nanofiber barrier leaf fertilizer, nanotechnological calcite and kaolin applications on fruit yield and some quality characteristics of Kırmızı pistachio cultivar were investigated. The purpose of the study was to compare the effects of leaf preparations on the reduction of damage caused by heat stress and sunburn, and to determine their effect on yield and quality of pistachios. The preparations were applied by spraying to the tree canopy at different doses and at different times. The first application was before the bud bursting in the early spring; the second application, just before flowering in early spring; and the third application was after the fertilization. In this study, Nanofiber Barrier (NFB) leaf fertilizer containing liquid formulations of potassium, phosphorus, copper, boron, zinc and molybdenum, nanotechnological calcite containing calcite particles treated with mobile ion technology and kaolin in powder formulations were used. Yield and quality measurements were carried out on the fruits harvested in August. According to results obtained from the study, it was found that NFB, calcite and kaolin applications had positive effects on the yield as compared to the control. However, the highest yield increase was obtained from NFB application. As a quality criterion, splitting ratio, 100 fruit weight, kernel ratio and green kernel were examined. The highest splitting rate was obtained from kaolin application, and NFB and calcite applications were found to be higher than control.

Keywords: Pistachio, NFB, calcite, kaolin, yield

PISTACHIOS IN KYRGYZSTAN: CONDITION, PROBLEMS AND PROSPECTS

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Abstract

Pistachio-Pistacia vera L is one of the main forest-forming species of walnut forests in Kyrgyzstan. The total area is 36,400 hectares, or 3.4% of the total forest area of Kyrgyzstan and is concentrated in the south-western slopes of the Fergana mountain Range and Chingir-Tash massif.

Pistachio is the only breed that can be cultivated not only in the extremely dry conditions in the foothills of the rain-fed, but even in takyrs in the desert belt. It grows well and bears fruit in rain-fed zone, has a high resistance to drought. In the given article there is information about contemporary conditions of pistachio forests in Southern Kyrgyzstan. Also offered required measures to increase the productivity on the basis of scientific researches and foreign experience by thinning and re-grafting male and bad productive female plants.

Keywords: Pistachio, dense planting, budding, grafting.

PRODUCTION OPPORTUNITIES IN PECAN NUTS

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Abstract

Pecan nut is a hard-shell species of Carya varities (Carya illinoensis) belongs to the Juglandaceae family of Juglandales. Pecan nut is grown in different parts of the world. İt is cultivated on the Aegean and Mediterranean regions. In addition, positive results are obtained Pecan cultivation in the GAP region with conducted research.

Pecan walnut is a troublesome fruit in terms of production and propagation possibilities. Therefore, different production and reproduction techniques are being developed. Pecan is not suitable for vacine production. Seed is generally used as production material. Seeds stored in the warehouse can be germinated by different methods. Pecan varieties are propagated by eye or pencil vaccines on rootstocks.

Another method of vegetative propagation is propagation by tissue culture. Tissue culture, with its advantage, enables the production of desired lines intensively. Therefore, it becomes an important alternative to the traditional propagation method such as seed, vacine , branching and grafting. Nowadays, with the help of many studies, new techniques are tried in production and reproduction of Pecan nut for geting successful results.

Keywords: Pecan, Duplication, GAP Region

PROPERTY OPPORTUNITIES FOR SOFRAL AND DRYING IN SOUTHEASTERN ANATOLIA

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Abstract

Fig (Ficus carica L.) is an important species in Turkish agriculture. Many studies have been conducted for determing futures of species which is groving in Southeastern Anatolia. It is a kind of fruit that is spread as wild in Southeast Anatolia. Nutritional value is very high. İt is consumed as fresh and dried. 30% of total production consumed as fresh fruit in the domestic market. However, 70 % of total production is consumed in both domestic and foreign markets as dry fruit.

There are many varieties of figs that have been adapted to the soil and climatic conditions of the Southeastern Anatolia Regi on and have not yet been researched. Fig, which can easily grow in the climate of the region, is considered to be the only plant species adapting of arid, calcareous and marginal soils that t do not have irrigation opportunities. The fact that the GAP region is the gene source of fig and is important in the development of new varieties by vaccination. Fig is a fruit that contains high dietary fiber, phenolic substances and minerals. Considering the rich fig heritage of our country, high antioxidant capacity and colorful varieties of fig are not practically examined for dried conditons.

Since the genetic diversity of figs is not lost, it is needed to have selection studies and preservation of the obtained materials. In our region, conducted studies have been showed that 35 promising genotypes have exist. New varieties should be obtained by separating these genotypes as drying and fresh table. New projects are needed to bring these new special varieties into the national economy.

Keywords: Fig, GAP Region

RELATIONSHIP BETWEEN STOMATAL DENSITY AND SOLUBLE SOLID PERCENTAGE OF APRICOT: DIFFERENCE BETWEEN CULTIVARS APPROPRIATE FOR DRYING PROCESS AND FRESH CONSUMPTION

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Abstract

Pores on the epidermis of leaves which achieve the evaporation and exchange the gases between outside and results from physiological activities of plant is named as stomata. In this study, the number of stomata on the leaves of Hasanbey, Hacıhaliloglu and Çatalbey apricot varieties grown in Malatya region on different altitudes (1115, 855 and 731 m) has been evaluated with fruit characteristics such as fruit weight and percentage of soluble solid. The samples of leaves and fruits were taken at the beginning of the harvest from 12-15 years old trees. To determine the stomata numbers, the epidermis layer was pulled out by nail polish from the lower surface of the leaf. Stomata were counted by using the microscope with a 10x40 magnification in 0.0625 mm2 area and calculated as stomata numbers per mm2. There was a positive and statistically significant correlation between fruit weight and stomata numbers. The correlation coefficiency (r) was found as 0.295. Negative but statistically non-significant correlation was determined between stomata numbers and percentage of soluble solids (r=-0.127). Then, available cultivars appropriate for drying process and fresh consumption were also compared in three different regions and the stomata numbers of the cultivars appropriate for drying process were found less than that for fresh consumption. These findings may be useful to shorten the necessary period for selection studies and to improve new cultivars.

Keywords: Apricot, stomata numbers, fruit weight, soluble solid percentage

EFFECTS OF DIFFERENT PLANTING TIMES AND KORM SIZE ON PLANT GROWTH, DEVELOPMENT AND FLOWER YIELD OF GLADIOLUS (GLADIOLUS GRANDIFLORUS) IN ŞANLIURFA CONDITIONS

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Abstract

This work; It was carried out to determine the effect of different planting times and corm size on plant growth and development and flower yield in Gladiolus spp. Red Beauty gladiolus was used as the material in the research. In the trial; Corms with 2 different tuber sizes (10-12 cm, 12-14 cm) were used and 5 different planting times (1 April, 15 April, 1 May, 15 May and 1 June) were applied. In the study; out time (day), flowering time (day), plant height (cm), leaf number (pieces), flower stem length (cm), spike length (cm), floret number (pieces/flower), flower stem thickness (mm), new corm diameter (cm), new corm circumference (cm), new corm number (piece/plant), new corm weight (g/plant), cormel number (pieces/plant) and weight (g/plot) and plot corm yield (g/plot) was determined. It was determined that the planting times were suitable for cultivation in Sanliurfa conditions in terms of yield and quality characteristics. The best gladiolus cultivation times for Şanlıurfa vary, but the best results are obtained from large tubers (12-14 cm). As the temperature increased, there was an increase in corm growth times, a decrease in plant height, number of leaves, new corm weight, cormel number and weight. The maximum flowering time and parcel yield were obtained from the 5th planting time (June 1), the longest spike length, the number of floret, the number of cormel and the cormel weight and plant height were determined from the 1st and 2nd planting time, there was no significant difference between planting times in other investigated parameters. In most of the parameters investigated in the experiment, large corms (12-14 cm) were found to be better than small corms (10-12 cm).

Keywords: Gladiolus spp, planting time, korm Size, yield, quality

SELECTION OF THE BEST POLLINATORS FOR SEED PRODUCTION FROM "BADAMI ZARAND" AND "GHAZVINI" PISTACHIO ROOTSTOCKS

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Abstract

In order to study the pollen effects of different pistachio male genotypes with desirable vegetative characteristics and access to seedlings with suitable growth characteristics, this study was carried out to selecting of superior male genotypes for pollination of Badami zarand and Ghazvini cultivars (common rootstocks using in Iran) were done. For this purpose, 10 male genotypes for each rootstock that were been selected by growth characteristics, flowering time, flowering period in former experiments, were used. Average pollen content per cluster and pollen viability of these male genotypes was studied.

Examination of pollen content in 10 selected male genotypes for pollination of Badami zarand showed that B6 genotype with the highest pollen content of 146 mg in cluster had the highest pollen production. Pollen germination percentage of selected male genotypes showed that B4 genotype with 93% germination had the highest germination rate of pollen. Survey of pollen content in 10 selected male genotypes for pollination of Qazvini showed that male G5 genotype with the highest pollen content of 88 mg in cluster had the highest pollen production. Comparison of means of pollen germination percentages showed that G6 male genotype with 93% germination had the highest germination rate of pollen. the best pollinators for the seed production from Badami Zarand rootstock, male genotypes B6 and B8, and for Qazvin rootstock, male genotypes G4 and G5 are introduced.

Keywords: Badami zarand, badami ghazvini

SIMPLE METHODS FOR NON-CHEMICAL CONTROL OF THE COMMON PISTACHIO PSYLLID, AGONOSCENA PISTACIAE

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Abstract

The common pistachio psyllid, Agonoscena pistaciae Burckhardt and Lauterer (Hemiptera: Aphalaridae) is the most important key pest of pistachio trees in Iran that cause economic damage. This pest has become resistant to most of pesticides. Therefore, it is better, non-chemical methods were used to prevent further development resistance including, avoiding of using fertilizers containing elements N, Zn and Fe before the critical stage (rapid growth kernel) to reduce soluble amino acids and attractiveness pistachio tree. Instead, usage fertilizers contain elements P, K and Cu to increase tree resistance and reduce population density of common pistachio psyllid, planting 'Akbari' pistachio and Pistacia atlantica mutica around the pistachio orchard as a trap plants, increasing relative moisture in tree canopy by water spraying on trees to create unfavorable conditions for activity this pest, Plowing between rows of trees to eliminate overwintering form, using corrugated cardboard traps around the base of tree trunks as overwintering refuges and then to eliminate them, to apply yellow sticky traps to attract adults and utilization of botanical insecticides and mineral insecticides such as sulfur and kaolin.

Keywords: PISTACHIO PSYLLID, AGONOSCENA PISTACIAE

SOME TREE AND FRUIT CHARACTERISTICS OF THE IMPORTANT STANDARD AND LOCAL POMEGRANATE CULTIVARS GROWN IN ÇÜNGÜŞ (DIYARBAKIR) DISTRICT

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Abstract

In this study, it was aimed to determine some tree and fruit characteristics of important standard and local pomegranate cultivars grown in the Çüngüş district of Diyarbakır. In this context, one standard pomegranate cultivars (Hicaznar) and three local pomegranate cultivars (Ahmet Kaya, Mayhoş and Çüngüş 1) were studied. In the study, it was determined that fruit weights, fruit lengths, fruit widths, fruit volumes, fruit juice amounts, fruit density, thousand kernel weight, calyx lengths, calyx widths and shape indexes were changed between 175.44-458.80 g, 75.34-110.46 mm, 75.81-110.26 mm, 167.67-505.00 ml, 36.20-197.68 ml, 1.21-1.38 g/ml, 62.057-110.41 g, 8.38-17.54 mm, 12.75-16.75 mm and 0.84-0.91, respectively. Also, SÇKM amounts, titratable acidity, and pH were ranged between 14.2-16.20 %, 4.34-34.49 %, and 2.73-3.76 %, respectively. In addition, the shell sub-ground color, top ground color, core hardness, fruit taste, grain color, number of upper chambers, number of lower chambers, appearance of the chambers, ease of graining and fruit pulp weights of the varieties were determined.

Keywords: Çüngüş, Pomegranate cultivars, Local pomegranate cultivars, Pomological characteristics, Fruit selection

SUSTAINABILITY OF ROSA L. TYPES PRODUCTION AND MARKETING IN SANLIURFA OF TURKEY

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Abstract

Throughout the history of the world, roses have an important place in our daily lives as an ornamental plant with its fragrance, attractive appearance and at the same time in socio-cultural and health fields. Roses are used because of their splendid forms, colors or fragrant flowers. Especially the flowers are numerous. However, when the rose varieties are examined, it is seen that they show important landscape features with ground cover, climber-wrapper, shrub and shrub forms. Also, Rosa L. taxa for many years; food products such as rose oil, rose sherbet, marmalade, jam, molasses, rosehip tea were produced to meet the domestic needs. However, roses play an important role in the ecosystem by providing contributions such as wild animals shelter and food. Southeast Anatolia, Eastern Anatolia has a rich source of plant material. It also has suitable ecological conditions for rose cultivation. Knowing the ecological characteristics and geographical distribution of rose taxa in light of the determination of genetic diversity will contribute to the rose industry. Under the conditions of our region; knowing the ecological characteristics and geographical distribution of the roses in the light of the genetic diversity determination will contribute to the rose making sector. Roses are one of the most important materials that can be widely used not only in micro-scale but also in rural and urban landscape planning. One of the biggest problems in urban landscape planning is the use of exotic varieties with the plastic appearance and no smell, coming from abroad, instead of our domestic varieties. Roses are one of the most important materials that can be widely used not only in micro-scale but also in rural and urban landscaping planning. To contribute to the landscape planning studies by determining the landscape characteristics of the local Rosa taxa, whose natural and cultural distribution has been determined within the boundaries of the research area, and also to examine the ecological requirements and propagation possibilities of these varieties by means of various analyzes, in particular to the national economy, ornamental plants sector and new breeding activities and thus contribute to the country's economy. Although the genetic diversity of rose taxa has been determined in our country before, no detailed study has been found in certain parts of this subject except for some localities in the East and Southeast Region. In this context, it is thought that the determination of the criteria taken into consideration in the research of the rose genera commonly used in landscape-ornamental plants and industry will contribute to the national economy. It is thought that the determination of these characteristics of the roses that form the green texture of urban and rural landscape areas in Şanlıurfa province will constitute an infrastructure for Landscape Architecture and Horticulture studies, especially for breeding.

Keywords: Rosa L., Landscape Planning, Plant Breeding, Şanlıurfa

THE CURRENT SANITARY CONDITION OF PISTACHIO WOODLANDS IN KYRGYZ REPUBLIC

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Abstract

There are relic walnut-fruit forests in the south of Kyrgyz Republic. These forests play an important water-protecting, water-regulating and soil-protective role, and also are a base of valuable fruit food products. These valuable fruit species are wild species such as walnut, noble pistachio, apple, pear, cherry plum, almond, barberry, hawthorn, raspberry, currant, etc.

This article provides information on the negative impact of various factors on the ecosystem and the modern sanitary condition of pistachios in southern Kyrgyzstan. Measures to increase the stability of pistachios based on scientific research and foreign experiments by conducting sanitary surveillance and deciding on the need to use biological agents and pesticides to regulate the number of pests and epiphytotic diseases are proposed.

Keywords: Pistachio, unpaired silkworm, caterpillars, biological pesticides, insects

THE EFFECT OF CALCIUM AND BORON APPLICATIONS FROM LEAF AND SOIL ON POMOLOGICAL PROPERTIES AND FRUIT DEFORMATION OF OLIVE IN AYVALIK VARIETY

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Abstract

Deformation ("monkey face") is common in olive fruits and boron deficiency has been reported as the most common cause. It is also known that calcium enhances the uptake of boron in the fruit and the structure of the cell wall. In this study, it was aimed to investigate the effects of different doses of calcium (Ca) and boron (B) applications from foliage and soil on pomological properties (fruit and seed weight, fruit volume and pulp/seed ratio) and fruit deformation of olive. The study was carried out between 2008-2011 in a plantation of 20 years old Ayvalık olive varieties in Kemalpaşa, İzmir. 5 different leaf applications (Ca0.5%, B0.3%, B0.5%, Ca0.5xB0.3% and Ca0.5xB0.5%) and 6 different soil applications (Ca100 g/tree, B200 g/tree, B400 gr/tree, Ca100xB200 gr/tree, Ca100xB400 gr/tree, post-harvest Ca200xB400 gr/tree) were achieved. No statistically significant difference was found between the applications in terms of pomological properties in fruit and seed. The deformation rates of the fruit were determined at the lowest for leaf Ca0.5xB0.3% (11.9%) and the highest for leaf Ca0.5% (30.8%) applications in the absence years with limited harvest. In the presence years, the lowest rates of deformation in fruits (32,9%) and seeds (34,0) were obtained with Ca100xB200 gr/tree soil application. The highest deformation rates of seed was obtained with the application of leaf Ca0.5% (55,3%). As a result, co-administration of calcium and boron from leaves or soil generally has a positive effect on fruit deformation of olive, whereas calcium alone has negative effects.

Keywords: Olive, pomological properties, fruit deformation, boron, calcium

THE EFFECT OF DIFFERENT DOSES OF POTASSIUM (K +) APPLICATIONS ON TOMATO PLANTS UNDER DROUGHT STRESS

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Abstract

The aim of this study is to determine whether the application of different doses of K + to the drought stress (PEG-6000) treated tomato plants will increase or not the drought tolerance in the plant.

Adamset F1 hybrid tomato plants were used in the study. Tomato plants were grown in hydroponic culture using Hoagland nutrient solution in a controlled climate chamber with 16/8 hour light / dark photoperiod, 250 C temperature, 65% humidity, 400 µmol m-2s-1 light intensity. To the plant nutrient solution, 136ppm, 156ppm, 176ppm, 196ppm and 216 ppm doses of potassium were added. 7% of polyethylene glycol (PEG-6000) were added to the plants grown in the Hoagland nutrient solution when they became 5-6 leaves. After the plants were exposed to drought stress for 7 days, samples were taken from the plants. In the plants, total plant weight, root, stem and leaf weights, stem length, stem diameter and number of leaves were examined. In addition, the leaf color values of the plants were examined using a scale of 1-5, which indicates the effect of drought stress on the plants.

In the study, it was seen that K + doses caused differences on plant growth parameters. It has been determined that potassium applications relatively reduce the negative effect of drought stress on plant growth in tomato plant.

Keywords: omato, drought, PEG-6000, potassium, plant growth

THE EFFECTS OF GIRDLING ON TREE PHYSIOLOGY AND USAGE IN FRUIT GROWING

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Abstract

Farmers have practiced the use of girdling and related techniques in order to increase crop production. Various techniques such as breeding, plant nutrition, disease and pest control and the use of plant growth regulators are used in order to obtain high quality and high yield in fruit growing. Two kinds of horticultural techniques are used to increase fruit yield and quality in fruit growing: (1) Extraction of certain plant organs and fruits (ex., Pruning, fruit thinning); (2) blocking communication between various organs of the tree (eg, ringing, scoring, girdling). Girdling is mainly an intervention in the transport of photosynthesis products, mineral substances and plant regulators by phloem between the tree crown and roots. We can see the effects of girdling in a short and long time as well as local and whole fruit tree effects. In this study, the benefits of girdling in fruit growing and their effects on tree physiology were discussed.

Keywords: Horticultural practice, Fruit yield, Floral induction, Phloem transport, Assimilate accumulation

THE IMPORTANCE OF SOME MICRO ELEMENTS IN FIG ORCHARDS

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Abstract

Fig trees in our country in the Aegean, Marmara, Southeast Anatolia, Black Sea, Mediterranean, Central Anatolia regions and some microclimate areas are reported to show general spread Our country's fig production is carried out on 513.893 decare area with 10.939.770 trees.

Since fruit trees are perennial plants, feeding and fertilization problems are of particular importance compared to annual plants. Therefore, for a balanced fertilization, the nutritional status of the plant must be known first. Leaves are the organs that best reflect the nutritional status of the plant, and have provided indisputable facilities, especially in the solution of fertilization problems of fruit trees. However, achieving the expected results from the leaf analysis depends on the proper sampling, preparation of the analysis and the precise application of the selected analysis method.

In fruit trees, micro elements are absolutely necessary for growth and development as well as for the production of certain enzymes and hormones. Microelements are difficult to absorb especially in calcareous soils. Therefore, when the deficiencies are determined as a result of the analysis, it should be applied in the form of foliar fertilizer.

Keywords: Fig, micro, elements, quality

THE PROBLEMS OF OLIVE PRODUCERS IN MARDİN CITY AND EVALUATION IN TERMS OF SUSTAINABILITY

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Abstract

The fact that olive is the homeland of Mardin and table olives and olive oil become a culture shows that olive cultivation in the city dates back thousands of years. Demand for olives in the country and in the city is increasing day by day. The fact that the region has an important place in terms of olive production has been decisive in the selection of the study area. In this research, data obtained from studies, publications and reports on olive production were used. There is an increase in the olive grove area established in the research region in recent years. However, quantity and quality losses have been observed in olive production. These losses are evaluated within the scope of production, harvest and post-harvest applications. Olives produced in the districts, villages and towns where the olive production is concentrated in the research area should be promoted with a harvest festival and local olive varieties should be introduced. A multi-faceted olive festival in the region can have a positive impact on the production and marketing of the product as well as integrating it with the potential of cultural tourism in the region.

Keywords: Mardin, Olive, Oliveoil, Sustainable

THE USAGE AND IMPORTANCE OF DWARF ROOTSTOCKS IN MODERN FRUIT GROWING

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Abstract

Rootstocks are very important fruit farming sector. In modern fruit growing, the variety used has an effect on yield, tree development and standard fruit production, and in addition to these characteristics, the rootstock used has an important effect on fruit yield, fruit quality, adaptation to different climatic and soil conditions, resistance to diseases and pests. Increasing the yield to be obtained in fruit growing is achieved by planting more trees in the unit area by high density plantation of trees which are grafted onto dwarf rootstocks..

The most effective way to control tree height is to use dwarf rootstocks. Dwarf rootstocks not only increase the yield to be obtained from the unit area, but also take into account the age at which it is invested. At the same time, dwarf rootstocks facilitate cultural processes applied to fruit trees, reduce costs and improve quality. High density planting systems can be done using dwarf rootstocks and it is possible to get more products from the unit area. In this point of view, production under the title of modern fruit growing with dwarf rootstocks has become a necessity.

Keywords: Fruit, tree, rootstock, dwarf, high density.

THE USAGE AND IMPORTANCE OF SOME MACRO ELEMENTS IN FIG ORCHARDS AND FRUITS

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Abstract

As with fig production in Turkey age is the leader in the production of dried figs in the world. According to data from the year 2017 72.000 tons of dried fig production is in the leading position in the industry with our country, the world's leading countries in the production of dried figs respectively Turkey, Iran, USA, Greece, Spain and Italy.

Figs are high in natural sugars, minerals and soluble fibre. Figs are rich in minerals including potassium, calcium, magnesium, iron and copper and are a good source of antioxidant vitamins A and K that contribute to health and wellness. This situation occurs from soil nutrition. Macro elements are essential for all kind of fruit trees. Figs are often recommended to nourish and tone the intestines and act as a natural laxative because of their high fibre content. Macro elements are very important for growth and development.

The relationship between nutritional status and quality characteristics in fig mineral nutritional, shoot development and quality characteristics. Nitrogen increases the growth, development and shoot activities of figs. However, there may be an increase in the number of fruits in case of over-feeding with N therefore, the fruits may remain small and consequently the quality Potassium nutrient is positive on flavor, taste and color in fruit sunburn, which is an important problem in figs. It decreases. However, high levels of K is thought to increase, Calcium nutrients reduce fig cracking, high level As a result of feeding with Ca may increase sunburn, fruit size and the fruit color may be relatively darker.

Keywords: Nutrition, fig, macro, elements, yield,quality

USE OF ORGANIC FERTILIZERS IN PISTACHIO AGRICULTURE

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Abstract

Pistachio is grown in the appropriate microclimate areas of the parallels 30-45 ° of the northern and southern hemispheres in the world. Our country is located in the northern hemisphere as well as the center of the pistachio gene and one of the major pistachio producer countries in the world. Especially, Southeast Anatolia has an important place in pistachio cultivation. This region is one of the gene centers of pistachio and is the place to cultivate for the first time. Due to its unique ecological characteristics, the southeastern Anatolian region has enabled the pistachio to grow and spread successfully.

Although pistachio is not a selective plant in terms of soil demand, it can grow in almost any soil except heavy clay soils. The territory of the region is rich in lime and poor in plant nutrients. For this reason, fertilization is one of the cultural measures taken in order to ensure regularity in efficiency and increase quality. It is a known fact that the nutrients in the soil are more or less proportional to one another, they can be taken to the plants for the plants that are produced and they can prevent the functions in the plants and they have negative effects on the yield and quality of the plants. Therefore, by revealing the chemical and physical properties of the soil, the relationship between soil nutrients and soil properties in soil must be known. Generally, the content of organic matter is very low in soils where pistachios are grown. This ratio is around 1.5 2.0%. This shows that the use of organic matter in the gardens is important. This is very important to obtain optimum benefit from fertilization in soil.

Keywords: Pistachio, fertilization, organic matter, growth, yield.

USE OF ORNAMENTAL PLANTS IN ÇAYCUMA DISTRICT PARK AND CHILDREN PLAYGROUNDS

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Abstract

Children's playgrounds are important places for the physical and social development of children. With the increasing population in urban areas, the need for children's playgrounds in urban green area planning increases. Parks and playgrounds play an important role for children to learn and raise awareness about nature and the environment. In this context, children's playgrounds need to be arranged safely and comfortably to enable children to know and explore nature and also for parents to be comfortable.

This study was conducted to determine the current status and competence of children's playgrounds in Çaycuma district center. Children's playgrounds in the district, which ornamental plants that form the foundation stone of the children's playground and park, were identified by field observation. It was evaluated in terms of aesthetics, functionality, and reliability by taking into consideration the effects of ornamental plants used in planting works in children's playgrounds in the district center.

Keywords: Playgrounds, ornamental plants, aesthetics, functionality, reliability, park, Çaycuma

USE OF PLANT GROWTH REGULATORS IN VINE PLANT AND APPLICATION RATES

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Abstract

Grape cultivation is very common in our country. Grape, which is the most consumed fruit, is a food that has high importance in terms of nutrition and health as well as economically. Foods obtained from grapes and grapes contribute to a healthy diet with its rich components. The most important of these is phenol compounds, which are a powerful antioxidant. Both in scientific studies and written and visual media, these compounds prevent cardiovascular disorders, reduce bad cholesterol and even delayed physical and mental aging in the foreground. In vine cultivation, especially in table grape production, quality comes to the forefront. Plant growth regulators play an important role in both the vegetative and fruit size and quality of the vine plant. Different plant growth regulators and different dosages are used to extend the arm, increase flower powders, and provide large size. Plant growth regulators consist of 5 groups: auxins, cytokinins, gibberellins, dormins and ethylene groups. The use of hormones in these groups is different. As a result of the researches, it was found that plant growth regulators had a significant effect on yield and quality.

Keywords: Grape, plant growth regulator, hormone, health

USEFULNESS OF DEFICIT IRRIGATION STRATEGIES IN FRUIT TREES ORCHARDS UNDER WATER SCARCITY

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[1]Tunus

Abstract

The growing water scarcity and poor management of the available water resources are the major threats to sustainable development of agriculture in arid and semi arid regions. Consequently, water is becoming the most precious of natural resources in many areas of the world. Because of limited water resources, drip irrigation has been widely used in attempts to reduce water losses and increase irrigation efficiency. However, the growing rainfall deficits and increasing competition for water from other economic sectors are major threats to sustainable fruit production. The pressure is particularly affecting species, which have high irrigation water needs during the summer season. Presently, irrigated orchards are frequently subjected to drastic reductions in water supply. Expected climate change risks would most likely exacerbate the already critical situation. Consequently, irrigated orchards are facing today the challenge of producing more fruits to meet the ever growing population needs with less water. Water scarcity in irrigation demands the improvement of water productivity (WP) as a critical goal. One of the most promising techniques that would help attain this objective is the use of Deficit Irrigation strategies as RDI (regulated deficit irrigation) and PRD (partial root-zone drying). Consequently, cultivation strategies must shift to deficit irrigation practices and adopt methods of trees training to chronic water deficits. Findings obtained from research show, that with better water management it is possible to ensure sustainability of orchards. Experiments revealed the potential of this technique as a way of reducing water use in tree crops with little impact on yield and fruit quality. It is also assumed that adequate choices of variety, rootstock and irrigation scheduling techniques could be together sources of improvement. One option consists in changing the main objective of irrigation from seeking maximum yields to preservation of the agricultural system. Irrigation strategies not based on full crop water requirements are actually adopted for more effective and rational use of water. Many growers are willing to apply deficit irrigation scheduling to save water and to improve water use efficiency. Experiments, carried out under semi arid conditions in Mediterranean region, show the benefits that could be obtained from irrigation restrictions in fruit tree orchards. Our ongoing research work concern the impact of deficit irrigation strategies RDI and PRD on tree growth, yield and fruit quality. Moreover, because water demand for irrigation is increasing, leading to the use of low quality water resources, irrigation in fruit tree orchards with saline water is also investigated.

Keywords: Water scarcity, deficit irrigation, fruit tree, Mediterranean area

Oral Presentations
ZF-BKB-00-Plant Protection Department

A NEW AND IMPROVED METHOD FOR PLANT GENOMIC DNA EXTRACTION BY PRE-REMOVAL OF PHENOLIC AND POLYSACCHARIDE COMPOUNDS

MURAT DİKİLİTAŞ[1], HAVVA GÜMÜŞ[1], FERDA DANIŞ[1], ERAY ŞİMŞEK[1], MEHMET ERTUĞRUL GÜLDÜR[1]
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Abstract

Phenolic substances and polysaccharides produced in plants as secondary metabolites make difficult robust DNA analysis due to residual effects as they also impair DNA amplification and fragment analysis after isolation. Removal of these substances during DNA isolation cause delay and reduce quality of DNA samples. In this study, simple and and clearly effective protocol have been developed. This method aimed to remove of substances interferring with DNA molecules during isolation in advance. The results have shown that the method is fast, robust and could be used as an alternative method in plants with high phenolic susbstances.

Keywords: DNA isolation, DNA fragmentation, Phenolic compounds

A NEW HOST FOR CANDIDATUS PHYTOPLASMA SOLANI IN SANLIURFA PROVINCE PEPPER GROWING AREAS: PURSLANE (PORTULACA OLERACEA)

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Abstract

Plants exhibiting similar symptoms to those of phytoplasma-infected purslane (Portulaca oleracea) were collected from pepper production areas. The research was conducted to determine if phytoplasma is evident in these plants. Purslane plants with chlorosis, multiple shoots at shoots point, witch broom formation, yellowing and small leaf formation symptoms were collected in the pepper production areas of Birecik and Haliliye districts. A total of 14 samples were collected from 9 in Haliliye and 5 in Birecik and tested for the detection of phytoplasmas. The samples were tested for the possible phytoplasmas identification. Total DNAs from the samples were tested via direct-PCR with P1/P7 universal primer pairs and with the nested-PCR with R16F2n/R2 primer pairs for the possible presence of phytoplasmas. Four out of 9 samples collected from Haliliye district and 2 out of 5 samples collected from Birecik district were found positive with the phytoplasmas. The infection rate in Birecik and Haliliye districts was 40% and 44.44%, and the total infectious rate in both districts was 42.85%. Nested-PCR products were cut with EcoRI enzyme to confirm the presence of phytoplasma agent, then R16F2n/R2 products were subjected to DNA sequencing and it was checked by BLAST analysis in NCBI database. According to BLAST analysis, the nucleotide sequence of phytoplasma from Purslane (Portulaca oleracea) sample was 99% similar to Candidatus Phytoplasma solani. Since this phytoplasma disease agent results in important infections in pepper cultivation areas, early detection of this agent in weeds such as purslane would greatly restrict the spread of the disease agent. With this study, we determined the Candidatus Phytoplasma solani for the first time in Purslane (Portulaca oleracea) plants in Turkey.

Keywords: Phytoplasma, Pepper, Weed, BLAST analysis, Portulaca oleracea

AGAPANTHIA KIRBYI (GYLLENHAL, 1817) (COLEOPTERA: CERAMBYCIDAE) FOR NEW HOSTS

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Abstract

This study was carried out to identify Agapanthia kirbyi hosts in 2018-2019 in Diyarbakir, Turkey. This study was conducted by visual control methods on the plant. The samples were brought to the laboratory and cultured and the output of the individuals was observed. As result of the study, Agapanthi kirbyi was observed on some weed species such as Centaurea iberica Trev. ex. Sprengel, Centaurea solstitialis L., Silybum marianum L., Onopordum spp., Carduus sp.. The A. kirbyi adults was fed on the weed stem while the larvae was fed within the host stem tissues.The stem rot is appear due to the feed of adults and larvae. Therefore, it was observed that the plant was broken from the stem and dried before reaching the seed maturity. These weeds are especially cause problems in the plants are culturable in the winter season. It is thought that, A. kirbyi is able to suppress these weed species, C. iberica, C. solstitialis, S. marianum, Onopordum spp., Carduus spp. in agricultural areas and it can reduce of seed populations in the soil with respect to long term management strategies. An extensive study should be applied on A. kirbyi for using it as a biological control agent against weeds.

Keywords: Agapanthia kirbyi, Weeds, Hosts, Turkey, Diyarbakır

AN OVERVIEW OF DISEASES, PESTS, WEEDS AND COMMONLY USED PESTICIDES IN AGRICULTURAL AREAS OF BİTLİS PROVINCE

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Abstract

Pesticides are used for plant protection in agricultural areas. It is important to know the properties of chemicals (including type, amount and factors) that are used in pest control. The aim of this study was to determine pesticides used against diseases, pests and weeds commonly seen in agricultural areas in and around Bitlis province. As a result of this research, fungal diseases commonly seen in Bitlis: Erysiphe cichoracearum D.C., Pythium spp., Phytophthora infestans, Alternaria solani, Botrytis cinerea Pers., Sclerotinia sclerotiorum and Ophiognomonia leptostyla; Bacterial diseases: Pseudomonas syringae pv. tomato Pst. and Synchytrium endobioticum. Pests: Gryllotalpa gryllotalpa L., Aphididae, Cydia pomonella L., Helicoverpa armigera Hbn., Pieris brassicae L., Hypera postica Gyllenhal, 1813 and Cacopsylla pyri L.. Weeds: Amaranthus albus L., Sinapis arvensis L., Chenopodium album L., Cuscuta campestris Yunk., Cynodon dactylon L. Pers., Datura stramonium L., Orobanche spp., Phelipanche spp., Portulaca oleracea L., Heliotropium europaeum L. and Phragmites australis Cav. Trin. ex Steud. In 2018, 18.340 kg-lt pesticide [(insecticide 4.224 kg-lt), (fungicide 2.434 kg-lt), (herbicide 10.485 kg-lt), (acaricide 296 kg-lt), (rodenticide 401 kg-lt) and (other pesticides 500 kg-lt)] was applied in Bitlis. According to data from 2017, mostly herbicides were used in Bitlis compare to the world and Turkey pest and herbicide consumption average. Additionally, Bitlis was found to be among the provinces where less pesticide consumption was made.

Keywords: Bitlis; Plant protection; Pesticides

ANALYSIS OF PMR LOCUS AND ITS GENES IN CORYLUS AVELLANA BY COMPARATIVE GENOMICS

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Abstract

Powdery mildew is a devastating disease that affects various plants caused by many different fungi species from the Erysiphales order. The disease causes a decrease in the yield of agricultural plants. Powdery mildew fungi are obligate pathogens that can only multiply in host plants. In recent years, hazelnut produce experiencing yield losses due to powdery mildew in Turkey. The fungi that cause powdery mildew have been identified as Phyllactinia guttata and Erysiphe corylacearum. Hazelnut (Corylus avellana) is grown in many countries in Europe, Asia, North America, Oceania and Africa due to its nutritional and nutraceuticals properties. The solution provided by pesticides and conventional methods on powdery mildew disease is temporary. The development of powdery mildew resistant plants would provide a permanent solution for disease control. The R genes in PMR (powdery mildew resistance) locus provide resistance against powdery mildew disease. Here, we determined the R genes in PMR locus of Corylus avellana by comparing them in assembled genomes of closely related woody plant and Arabidopsis thaliana. These results will be useful for the production of powdery mildew resistant hazelnut species.

Keywords: Powdery mildew; PMR; hazelnut; Corylus avellana; comparative genomics

ASSESSING THE IMPACTS OF CLIMATE CHANGE ON POTENTIAL DISTRIBUTION OF INSECT SPECIES THROUGH ECOLOGICAL NICHE MODELS

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Abstract

Global climate changes are impacting the distribution of species at an enormous pace. Species distribution modes or so-called ecological niche models are widely used in assessing the impacts of climate change on potential distribution of earths' species. We hereby represent a simple procedure to build and project the future distribution of insect species through Maximum Entropy (MaxEnt) model. MaxEnt model requires occurrence records of the target insect species as well as climate data. Global climate data at finer resolution ~1×1 km grid can be downloaded from WorldClim (www.worldclim.org). Similarly, insect distribution data is available for global level at Global Biodiversity Information Facility Website (www.gbif.org). MaxEnt requires absence records of the species as well, and model uses random absences for this purpose. MaxEnt model can be downloaded from https://biodiversityinformatics.amnh.org/open_source/maxent/. After collecting the data of insect distribution and climate, MaxEnt model can be built easily. The maps obtained at the end of model fitting can be processed in ArcGIS and interpreted.

Keywords: Climate change, Insects, MaxEnt, Species distribution models

CLASSICAL AND BIOTECHNOLOGICAL CONTROL METHODS OF VIRUS DISEASES IN PEPPER PLANTS

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Abstract

Pepper plants are affected by numerous virus types. Virus diseases are more common in pepper plants grown in tropical and subtropical regions. An important reason for this is the fact that pepper cultivation is carried out in large areas in these regions, rapid transfer of pepper seedlings from one country to other countries and a large part of the share of pepper in the world trade is from these regions. In addition, it is thought that climate change, which has affected the whole world in recent years, may cause the spread of viruses and vectors and be seen in different regions. One of the most important factors causing the spread of the disease disease-carrying vector control is not performed properly. İntensity and overuse of the insecticides used in vector control revealed the resistance of the vectors to insecticides, making it difficult to control the vectors causing the spread of virus disease. For these reasons, it is very important to maintain both the product quality and the quantity of products obtained. To control the disease; taking cultural measures, struggle vector with suitable insecticides, obtaining viruses resistant plants by molecular genetic methods are among the important agricultural practices. This review deals with the elimination of disease-causing inoculation sources, the control of populations of carrier vectors and the development of virus-resistant pepper plants.

Keywords: Pepper plants, virus, molecular, genetic, resistance

DETECTION OF MAJOR STORAGE FUNGAL PATHOGENS OF MAIZE

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Abstract

Fungi are among the principal causes of deterioration and yield loss on farmers' corn during the storage. The study was carried out as surveys in 56 corn storage between 2015 and 2016 in Adana. Blotter and agar method were used for corn grains collected from storage to determine and identify fungi during this study. Among the fungal pathogens as *Fusarium oxysporum, Fusarium solani, Fusarium culmorum, Aspergillus flavus, Aspergillus parasiticus, Aspergillus niger, Penicillium italicum, Penicillium digitatum, Macrophomina phaseolina, Alternaria* spp. were found as the most common species in agar method as well as in blotter method. The most dominant storage fungi was defined as *Fusarium* (43%-58%), *Aspergillus* (35.4%-23.4%), *Penicillium* (11.8%-11.2%), respectively, in both methods. As a result, that all storages were contaminated by fungal pathogens. It has been concluded that it is necessary to determine the level of mycotoxin producing fungi on corn grains in storage, in terms of safety and quality control of food and animal feed.

Keywords: *Aspergillus, Fusarium, Penicillium*, fungi, storage, maize

DETERMINATION OF DODDER SPECIES, DENSITY AND FREQUENCY IN CHICKPEA FIELDS IN KAHRAMANMARAS

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Abstract

This study was carried out in Kahramanmaraş province and its districts in 2019 to determine the species, density and frequency of dodder during vegetation period in chickpea fields. The distribution of dodder species according to districts were identified as field dodder (Cuscuta campestris Yunck.), dodder (Cuscuta pedicellata Ledeb.) in Caglayancerit district and field dodder (Cuscuta campestris Yunck.), dodder (Cuscuta scandens ssp. scandens) for each Pazarcık, Dulkadiroglu and Onikisubat districts, C. campestris in Afsin Göksun, Türkoglu, Elbistan, Ekinözü, Nurhak and Andırın districts.

According to the districts, density of dodder species were found to be C. campestris (6.91 chickpea branches / m2) and C. pedicellata (2.83) in Caglayancerit, C. campestris (7.39) ve Cuscuta scandens ssp. scandens (2.69) in Dulkadiroglu, Pazarcık (22.49) and (3.15), Afsin (19.50), Türkoglu (12.63), Göksun (10.47), Elbistan (10.15), Onikisubat (6.38) and (1.95), Ekinozu (5.31), Nurhak (4.40) and Andırın district (2.84).

The frequency of field dodder (C. campestris) in districts were 41.27% in Pazarcık, 36.58% Afsin, 23.81% Turkoğlu, 19.64% Goksun, 18.59% Elbistan, 14.85% Dulkadiroğlu, 12.63% Caglayancerit, 11.40 % Onikisubat, 10.16% Ekinozu, 8.55% Nurhak and 4.87% Andırın. Other dodder species were between 4.00-10.00%.7

Keywords: Chickpea (Cicer arietinum), Dodder (Cuscuta spp.), Density and Frequency

DETERMINATION OF EAR ROT DISEASES ON CORN FIELDS IN ADANA PROVINCE

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Abstract

This research was conducted in 2015-2016 as a survey in 134 different farmer fields in main and second-crop corn fields of Adana province. Fungal factors and disease severity causing ear rot on cobs were determined within this study. The most commonly isolated fungi from corn cobs were Fusarium spp. (75.8-83.7%), Aspergillus spp. (35.8-47.3%) and Penicillium spp. (17.6-17.7%), respectively. Disease severity was found between 2.2% and 10.6% in survey areas. Furthermore, whole research area was determined to be infected by the pathogens. Cultural factors such as frequent planting, irrigation, fertilization may increase fungal developments. In addition, environmental conditions such as relative humidity and temperature play an important role in fungal development.

Keywords: Corn, ear rot, fungi disease, disease severity, Adana

DETERMINATION OF HOP STUNT VIROID INFECTIONS ON PISTACHIO (PISTACIA VERA L.) TREES IN SANLIURFA PROVINCE

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Abstract

HSVd infects many woody species including grapevine, citrus, peach, plum, apricot, almond, pomegranate, mulberry and pistachio. RT-PCR is the most sensitive and effective method for the identification of viroid agents by the application of the enzyme reverse transcriptase to the PCR technique. This study conducted to determine presence and characterization of Hop stunt viroid (HSVd) disease in Sanliurfa province pistachios by using reverse transcription polymerase chain reaction (RT-PCR). We collected 47 samples from trees which appears common viroid symptoms were noticed such as dwarfing, swells on stem and branches, leaf curling, leaf necrosis, petiole necrosis, leaf tip browning and dropping leaf. V19, V20 primers were used for determination of viroid. There was no any HSVd infection from samples which collected from the filed trees and seedling plants which grafted from suspected trees.

Keywords: HSVd, Pistachio, viroid, RT-PCR

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DETERMINATION OF THE EFFECT OF DIFFERENT HYDROPONIC CULTURE AND DIFFERENT NH4:NO3 RATIO ON THE DENSITY OF DETERMINATION OF THE EFFECT OF DIFFERENT HYDROPONIC CULTURE AND DIFFERENT NH4:NO3 RATIO ON THE DENSITY OF APHID [APHİS SPP. (HEMİPTERA: APHİDİDAE)] POPULATION IN GREENHOUSE LETTUCE CULTIVATION [APHIS SPP. (HEMIPTERA: APHIDIDAE)] POPULATION IN GREENHOUSE LETTUCE CULTIVATION

CEYHAN SÖNMEZ[1], MEHMET MAMAY[1], SELÇUK SÖYLEMEZ[1]
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Abstract

The hydroponic culture is used widely in greenhouse cultivation as soilless growing system. This study was carried out in order to determine the effect of different hydroponic culture method and nitrogen fertilization, when provided with different NH4-NO3 ratios, on the density of aphid populations [Aphis spp. (Hemiptera: Aphididae)] in greenhouse lettuce cultivation. The study was carried out with 4 replications according to randomized factorial design in the spring of 2018. Cosmos lettuce cultivar was used as plant material in the study. In this study, two different hydroponic culture (recirculation and floating) methods were used. The amount of nitrogen fertilizer needed by the plant is provided with four different ammonium (NH4) and nitrate (NO3) ratio. The four different combinations of NH4:NO3 ratio was included 0% NH4:100% NO3 (1st dose), 20% NH4:80% NO3 (2nd dose), 40% NH4:60% NO3 (3rd dose), and 60% NH4:%40 NO3 (4th dose). Within the scope of the study, in order to determine the population density of aphids in different hydroponic system and fertilization combinations, one central leaf was taken from each lettuce plant during peak population period. Nymph and adult aphids found below and above the leaf were counted and evaluated as average per leaf. As a result of the study, it was determined that the different hydroponic culture in which lettuce was grown were effective on aphid population, but the application of nitrogen fertilization in the form of difeernt ammonium or nitrate ratio did not affect the population of the pest. According to data obtain from the study, the highest average aphid population per leaf was determined in recirculation water method with 233,81 pieces/leaf density and the lowest population density was determined in floating growing system with 128,94 pieces/leaf. In the study, it was determined that hydroponic culture*fertilizer interaction had no effect on population density of the pest significantly. As a result, when selecting hydroponic culture in greenhouse lettuce cultivation the criteria of aphid preference, in which method the aphid population is high and in which system the population remains low, must be taken into consideration.

Keywords: Aphid; Hydroponic; Greenhouse; Lettuce; Soilless culture

DETERMINATION OF THE EFFECT OF DIFFERENT SOILLESS GROWING MEDIA AND DIFFERENT NITROGEN FERTILIZATION PROGRAMME ON THE DENSITY OF APHID (HEMIPTERA: APHIDIDAE) POPULATION IN GREENHOUSE LETTUCE CULTIVATION

MEHMET MAMAY[1], CEYHAN SÖNMEZ[1], SELÇUK SÖYLEMEZ[1]
[1]Harran University

Abstract

This study was carried out in order to determine the effect of different growing media and nitrogen fertilization, when provided with different NH4:NO3 ratio, on the density of aphid populations (Hemiptera: Aphididae) in greenhouse lettuce cultivation. The study was carried out with 4 replications according to randomized factorial design in the spring of 2018. Cosmos lettuce cultivar was used as plant material in the study. Perlite, cocopeat, peat, tree bark and rockwool used as soilless growing media. The amount of nitrogen fertilizer needed by the plant is provided with four different ammonium (NH4) and nitrate (NO3) ratio. The four different combinations of NH4:NO3 ratio was included 0% NH4:100% NO3 (1st dose), 20% NH4:80% NO3 (2nd dose), 40% NH4:60% NO3 (3rd dose), and 60% NH4:%40 NO3 (4th dose). Within the scope of the study, in order to determine the population density of aphids in different media and fertilization combinations, one central leaf was taken from each lettuce plant during peak population period. Nymph and adult aphids found below and above the leaf were counted and evaluated as average per leaf. As a result of the study, it was determined that the different growing soilless media in which lettuce was grown were effective on aphid population signifcantly, but the application of nitrogen fertilization in the form of different ammonium or nitrate ratio did not affect the population of the pest. According to data obtain from the study, the highest average aphid population per leaf was determined in bark media with 150,25 pieces/leaf density and the lowest population density was determined in rockwool media with 54,81 pieces/leaf. Similarly, in the study, it was determined that media*fertilizer interaction had an effect on population density of the pest significantly. Accordingly, the highest average aphid population per leaf was determined in bark media*3rd dose fertilizer interaction while the lowest pest population density determined in rockwool*2nd dose fertilizer interaction. According to the results, the highest yield was obtained from the peat media with 80% NO3 - 20% NH4 (2nd dose) fertilizer application. As a result, when selecting soilless growing media in greenhouse lettuce cultivation the criteria of aphid preference, in which media the aphid population is high and in which media the population remains low, must be taken into consideration.

Keywords: Aphid; Population; Greenhouse; Lettuce; Soilless culture

DETERMINING VIRAL DISEASES IN TOBACCO CULTIVATION AREAS IN AND AROUND ADIYAMAN PROVINCE AND ASSESSING THE 10 YEAR EPIDEMIC STATUS

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Abstract

This study has been conducted in two different terms in 2008-2010 and 2019. Following the land observations, sampling studies and laboratory analyses, it has been observed that the tobacco cultivation areas in the region were contaminated with TSWV, TMV and ToMV in the first 1st term. According to the findings from the 1st term, the rates of contamination were 22,84% in 2008, 44,70% in 2009 and 43,75% in 2010 and the average for the three years was 38,93%. Analysis of the samples taken from the contaminated areas yielded a single infection average of 51,48 for the 3 years, while the mixed infections was found to be 48.51%. With the purpose of confirming the existence of virus in these areas and to determine the growth in epidemic situations, a total of 93 samples have been collected in 2019 and the average infection rate has been established. The following study held a decade later has further detected CMV, AMV and TRSV but no ToMV has been observed. The total contamination rate has been found to be 70,96%. It has been observed that at the end of the study the epidemic rates of some viruses were increased and virus contamination increased by 35,48%, becoming 67,74%. No quarantine, certification or eradication against viruses was existing in the area and mechanically contaminating TMV was very common and double, triple infections were fatal.

Keywords: Tobacco, Viruses, Diseases, Adıyaman

DIGITAL FOLLOW-UP OF MATURITY STAGES IN TOMATO FRUITS INFECTED WITH PENICILLIUM EXPANSUM AND IN NON-INFECTED CONTROL PLANTS

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Abstract

Increase in world population has to be positively correlated with the increase of food and crop production to compensate and feed the increasing human population. Under these circumtances, quick and reliable methods to detect the conditions of crops during pre- or postharvest stages are of quite importance to act instantly and to take measures efficiently to prevent for further dissemination of diseases and deterioration of crops. One of the recent developments made by our team targeted to determine the condition of postharvest tomato fruits infected with Penicillium expansum. The postharvest disease agent not only reduces the quantitiy of fruits but deteriorates the quality of fruit parameters measured via vitamin C, lycopene, total soluble solutes and fruit hardness. The digital determination of the conditions of postharvest tomato fruit was correlated with the laboratory findings in terms of vitamin C and lycopene contents. Our findings were evaluated and discussed for further improvements of the tecnique.

Keywords: Postharvest tomato, Penicillium expansum, vitamin C, lycopene, total soluble solutes

EFFECT OF MICRONIZED CALCITE ON PEPPER PLANTS INFECTED WITH CUCUMBER MOSAIC VIRUS

MEHMET ERTUĞRUL GÜLDÜR[1], AHMET ÖZKILIÇ[1]
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Abstract

Cucumber Mosaic Virus (CMV) is one of the most important virus causing economical losses in pepper production fields. The study was carried out in order to investigate, possibility using of micronized calcİte as plant activators in control of CMV in pepper plant. In this study, effect of micronized calcite in pepper fruit yield plant height infected with CMV was investigated. Results were evaluated with one-way analysis of variance in SPSS program. Multiple comparison Tukey test in the comparison of means was used. Firstly, plants that infected with CMV were replicated with mechanic inoculations on the healthy plants. It is founded that micronized calcite applied groups after inoculated with CMV were expressed the most plant weight and plant length. Also, it was determined that plant group which is applied micronized calcite had showed better developing than control groups.

Keywords: Pepper, Cucumber Mosaic Virus, Micronized Calcite

FOLIAR STAINING METHOD FOR DETERMINING THE RESISTANCE LEVELS OF DIFFERENT CROP VARIETIES AGAINST LEAFHOPPERS (CICADELLIDAE: HEMIPTERA)

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Abstract

Leafhoppers are one of the most abundant groups of plant-feeding insects belonging to Cicadellidae family in Hemiptera order. They cause significant losses to crop plants by removing sap, destroying chlorophyll, transmitting diseases, or curling leaves. Natural enemies are not enough to suppress these pests and chemical control is usually practiced to reduce their populations. The use of crop varieties resistant to these pests is the top priority within the scope of IPM. Foliar staining method is used against the damage on the leaf of leafhoppers through cafeteria-style choice tests to segregate the resistant or susceptible varieties. For this purpose, the damaged leaf is stained with acid fuchsin after feeding and then observed under an illuminated binocular microscope. As a result of staining, it is easily understood and counted to what extent these pests preferred and fed on a particular variety through counting the salivary sheaths and punctures created by these pests in the tissue by dipping their stylet into leaf tissue. After counting the number of punctures and stylet tracks, the feeding preference or resistance status of the verities could easily be determined. Because of this method, it is not necessary to determine the population density of these pests in a long period to determine the preferred varieties. Furthermore, the transparent colored and invisible eggs of these pests laid in leaf tissues can be determined by the technique and counted in easily. The method would be useful for researchers studying the host plant resistance such as cotton, bean, tomato, etc. and other aspects of sucking insects.

Keywords: Leafhopper, staining, salivary sheat, stylet track, choice test

FREQUENCY, DENSITY AND WEED SPECIES IN KAHRAMANMARAS ONION PLANT AREAS

TAMER ÜSTÜNER[1], SENA DAL[1]
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Abstract

This study was carried out in 2019 in onion (Allium cepa L.) cultivation areas of Kahramanmaras province (Dulkadiroglu, Elbistan, Göksun and Onikisubat district) to determine the weed species, densities and frequency. As result of the research, 89 weed species belonging to 29 families were determined. The weed species that very dense (Weed density> 10) in the onion field were Galium aparine L. (11.47 weed/m2), Anagallis arvensis L. (11.38), Sinapis arvensis L. (10.82), Ranunculus arvensis L. (10.70), Portulaca oleracea L. (10.64), Convolvulus arvensis L. (10.56), Amaranthus retroflexus L. (10.31) and Matricaria chamomilla L. (10.14).

Weed species that dense (weed density 1-10) in the onion field were Cyperus rotundus L. (7.83 weed/m2), Papaver rhoeas L. (6.77), Elymus repens (L.) Gould. (6.68), Sorghum halepense L. (6.08), Cynodon dactylon (L.) Pers. (6.00), Lolium multiflorum Lam. (5.49), Alopecurus myosuroides Huds. (5.48) and Capsella bursa-pastoris (L.) Medik. (5.47).

Frequency rate of weed species respectively, Sinapis arvensis L. (55.08%), Galium aparine L. (53.42%), Elymus repens (L.) Gould., (52.67%), Amaranthus retroflexus L (51.47%), Convolvulus arvensis L. (50.44%), Anagallis arvensis L. (50.37%), Papaver rhoeas L. (50.03%), Ranunculus arvensis L. (48.21%), .Portulaca oleracea L. (48.17%), Matricaria chamomilla L. (46.25%), Chenopodium album L. (45.10%), Cyperus rotundus L. (45.27%), Polygonum aviculare L. (42.45%), Cynodon dactylon (L.) Pers (41.37%) and Sorghum halepense L. (40.18%).

Keywords: Onion, Weed Species, Density, Frequency

MANAGEMENT SUCCESS AGAINST SUNN PEST IN RESPONSE TO TRANSITION FROM AERIAL SPRAYING TO CONTROLLED FARMER MANAGEMENT: AN OVERVIEW

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Abstract

Sunn Pest, Eurygaster integriceps Put. (Hemiptera: Scutelleridae), is very damaging insect pest of wheat and barley in the Southeastern Anatolia region, Turkey. Sunn pest has been managed by different chemicals in the region since 1950s. The most prevalent management method was aerial application of pesticides, which was terminated in 2004 and the pest was managed ground spraying by different ground instruments by the government till 2009. Sunn pest management got a transition to controlled farmer management (CFM) from 2009 to onwards. Within the scope CFM, all chemical practices were handed over to cereal producers except for providing technical information relating to sunn pest management by government organizations. A total of 853.479 ha was sprayed through aerial spraying in Southeastern Anatolia Region during 2004. Contrastingly, with transition ground application and CFM, 404.889 ha. (range 22.078- 772.696 ha.) was sprayed in 2005 year in the region. The average sunn pest sucking damage rate in wheat was 1.66% in 2004, which was decreased to 0.77% (0.42-1.35) between 2005-2019. It is an important achievement that the damage rate reduced to <1% after the transition from aerial chemical application to ground spraying and CFM. However, between 2014-2019 years, approximately 72.780 ha. (64.551- 81.642 range) where sunn pest control should be done was unsprayed and 3.1% (1.5- 4.4%) damage ratio in these fields has occurred.

The transition from aerial chemical application to CFM can be regarded as an important management strategy against sunn pest. However, an active linkage between producers and research and development organizations is needed for the sustainability of CFM. Moreover, different methods can be developed for sustainable sunn pest management through this active linkage. The producers must be given a practical demonstration on sunn pest, its damages and management. Furthermore, the reestablishment of natural cycles needs afforestation, polyculture, use of selective pesticides and selection of cultivars tolerant to sunn pest.

Keywords: Sunn Pest, Eurygaster integriceps, damage, ground spraying, controlled farmer management

PHYTOPLASMA AND VIRUS DETECTIONS ON LOCAL PEPPER VARIETIES EXHIBITING GROWTH ABNORMALITIES AND YELLOWING SYMPTOMS IN ŞANLIURFA

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Abstract

During vegetation periods, several surveys were conducted in local pepper cultivation areas of Şanlıurfa province, one of the most pepper producing province of Turkey, in order to identify the causal agent(s) of disease-like symptoms (chlorosis, yellowing, little-leaf formation and growth abnormality). Important viruses and phytoplasmas mainly caused "pepper yellowing disease" in field-grown peppers were investigated in Şanlıurfa province of Turkey. The objective of this study is to characterize the nature of yellowing disease complex through examining the incidence of some viruses and phytoplasmas in sampled plants. Young shoot, leaf and fruit samples collected from suspected pepper plants were investigated for presence of main viruses and phytoplasmas by DAS-ELISA and Nested-PCR analyses. Among tested viruses, PVY (8.4%), CMV (6.2%) and TEV (1.3%) were identified in pepper plants with low infection rates. Also, Phytoplasma infections were confirmed by Universal Nested-PCR and RFLP analyses and 'Candidatus Phytoplasma solani' and 'Candidatus Phytoplasma asteris' were identified by Nested-PCR/RFLP anaylses. In some cases, both pathogens have been observed to infect the same plant. Especially, phytoplasma infections along with mixed infection by CMV were confirmed by PCR analyses. As a result, more destructive symptoms and yield losses have been observed in that plants. Since both pathogens are difficult to control and have invasive characteristics, it is imperative to develop management strategies for crop plants. The present study confirms the incidence of mixed infection with both CMV and phytoplsama(s) in local pepper plants.

Keywords: Pepper, Virus, Phytoplasma, Nested-PCR, DAS-ELISA, Pathogen

PUTTING INSECTS ON SPATIAL DISTRIBUTION MAPS: CHALLENGES AND OPPORTUNITIES

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Abstract

Insects are key components of biodiversity and ecosystems yet underrepresented in spatial ecology. Increasing interest in the spatiotemporal distribution and biogeography demands spatial distribution maps of insects at finer scales. Furthermore, these maps are needed for assessing the impacts of climate change on future distribution of insects. Unfortunately, limited maps are available for insect species on regional and global scales. We hereby represent the challenges ahead in insect mapping and opportunities for mapping. Most of the survey studies aimed at determining insect diversity at regional scales use various sampling methods, each having varying degree of precision. Moreover, the surveys are conducted at coarse scale, making spatial interpretation of the data difficult. Insects are mobile and their sampling at different locations within a field varies with insect flights. Thus, conducting surveys on finer scales would be helpful in making spatial distribution maps of insects. These maps would help to understand within field variability of particular insect. Nonetheless, these maps would help in their easier management. The fine scale data would also help in understanding the climate change impact on the future distribution of insect species. Thus, a uniform sampling method must be devised at regional scales to generate the distribution and spatial distribution maps of insects.

Keywords: Insects, Spatial distribution mapping, survey methods

THE COCCINELLIDS (COCCINELLIDAE) PARTICIPATING IN NUMBER REGULATION OF A POMEGRANATE APHID (APHIS PUNICAE PASSERINI, 1863) (HEMIPTERA: APHIDIDAE)

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Abstract

Conducted observations in pomegrante (Punica granatum L.) gardens in different regions of Azerbaijan during 2013-2018 showed that 12 species of coccinellids (Coccinellidae) which belong to 9 genera, play special role in natural regulation of the frequency of the population of pomegranate aphid (Aphis punicae Passerini, 1863).

Following species were determined: Adalia bipunctata Linnaeus, 1758, Hippodamia variegata Goeze, 1777, Scymnus abietis Paykull, 1798, Scymnus frontalis Fabricius 1787, Oenopia lyncea Olivier, 1808, Oenopia conglobata Linnaeus, 1758, Stethorus punctillum Herbst, 1797, Harmonia quadripunctata Pontopiddan, 1763, Nephus redtenbacheri Mulsant, 1846, Coccinella septempunctata Linnaeus, 1758, Coccinella undecipunctata Linnaeus, 1758, Exochomus nigromaculatus Goeze, 1777.

As a result of the observations it has been found that depending on the landscape of the area, age of the pomegranate gardens, density thereof, agrotechnical measures, applied control methods, air conditions and sort of the plant, the encounter frequency of the species is not the same in everywhere. But, generally we can say that the most encountered species among the abovementioned species are Oenopia conglobata, Adalia bipunctata, Scymnus abietis, Hippodamia variegata and Harmonia quadripunctata.

Keywords: Azerbaijan, pomegrante, pomegranate aphid, Coccinellidae

THE IMPORTANCE OF ENTOMOPATHOGENIC BACTERIA IN THE CONTROL OF AGRICULTURAL PESTS AND PROMISING THESE ENTOMOPATHOGENS IN THE FIELD APPLICATION

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Abstract

The pests and diseases are significant constraints on agricultural production, responsible for around 40% loss of potential global crop yields. These losses occur despite the considerable efforts made at pest control, and they suggest that improvements in pest management are significant way forward for improving yields and access to food. Entomopathogens are considered environmentally friendly alternatives for suppressing these pest instead synthetic chemical insecticides. Entomopathogens are bacteria, fungi, nematode or viruses that can infect and subsequently cause disease in insects and other arthropods. They can indirectly impact cropping systems by serving as naturally suppressors of insect and mite pests. When there are epizootic outbreaks, entomopathogens are capable of causing rapid declines in large populations of their arthropod hosts. Many of these naturally occurring pathogens have been formulated and commercialized as insecticides. Among the entomopathogens, Bacteria; which are unicellular prokaryotic organisms having size ranging from less than 1 µm to several µm in length. More than 100 bacteria have been identified as arthropod pathogens among these bacterial families Bacillaceae, Pseudomonadaceae, Enterobacteriaceae, Streptococcaceae, and Micrococcaceae. Among the entomopathogenic bacteria, much attention has been given to the family Bacillaceae. Some of the bacterial species belonging to the genus Bacillus are highly pathogenic to arthropods, such as Bacillus thuringiensis (Bt) which is widespread in soil, is a lethal pathogen of a range of orders and is the most widely used entomopathogenic biological control agent. There are at present over 40 Bt products available for the control of insect-pests accounting for 1% of the global insecticide market.

Keywords: Pest management; Entomopathogen; Bacillus thuringiensis; Bacteria

THE IMPORTANCE OF ENTOMOPATHOGENIC FUNGI IN THE CONTROL OF AGRICULTURAL PESTS AND PROMISING FUNGAL ENTOMOPATHOGENS IN THE FIELD APPLICATION

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Abstract

There are estimated to be about 67,000 different pest species worldwide. They are a significant constraint on agricultural production, responsible for around 40% loss of potential global crop yields. These losses occur despite the considerable efforts made at pest control, and they suggest that improvements in pest management are significant way forward for improving yields and access to food. Entomopathogens are considered environmentally friendly alternatives for suppressing these pest instead synthetic chemical insecticides. Entomopathogens are bacteria, fungi, protozoans or viruses that can infect and subsequently cause disease in insects and other arthropods. They can indirectly impact cropping systems by serving as naturally suppressors of insect and mite pests. When there are epizootic outbreaks, entomopathogens are capable of causing rapid declines in large populations of their arthropod hosts. Many of these naturally occurring pathogens have been formulated and commercialized as insecticides. Among entomopathogens, fungi have garnered the most interest for research and use as biologically based insecticides. Entomopathogenic fungi are microorganisms that specifically infect and often kill insects and other arthropods. Most are nonpathogenic to plants, and relatively non-toxic to humans and animals. Therefore fungus-infected insects can be commonly found in nature. There are thought to be about 750 species of fungi that cause infections individual species and strains of fungus are very specific. In 2006, 129 fungus-based insecticides (mycoinsecticides) were reported to have been developed for commercial use. Mycoinsecticides are considered environmentally friendly alternatives to synthetic chemical insecticides; and similar to other pesticides, mycoinsecticides can be administered by ground or aerial sprays as well as broadcasted or applied as dusts or granules. Entomopathogenic fungi can reduce pest insect populations to levels that do not cause economic damage to crops, or those that are a mean of control in the reduction of disease vectors. They are also defined as facultative or obligate parasites of insects, with a high capacity for sporulation and survival. They constitute a group of great interest for the biological control of insects. Some promising fungal entomopathogens are Beauveria bassiana, Beauveria brongniartii, Metarhizium anisopliae, and Isaria fumosorosea. However, development, commercialization and use of mycoinsecticides are not always easy. Developers and users of these products must consider ecological, environmental and economic factors associated with their use to maximize their effectiveness.

Keywords: Entomopathogen; Fungi; Pest management: Beauveria bassiana

WHAT IS THE ROLE OF ENTOMOPATHOGENIC VIRUSES IN THE CONTROL OF AGRICULTURAL PESTS AND THEIR FUTURE IN THE FIELD APPLICATION?

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Abstract

Entomopathogens are considered environmentally friendly alternatives in framework of biological management against some agricultural pests. Entomopathogens are bacteria, fungi, nematode or viruses that can infect and subsequently cause disease in insects and other arthropods. Entomopathogenic viruses are interested by researchers and related commercial companies recent years. Entomopathonenic viruses are obligate intracellular parasites having either DNA or RNA encapsulated into a protein coat known as capsid to form the virions or nucleocapsids. These viruses have proved to be very effective in managing populations of certain pests such as Lepidoptera and Hymenoptera forest pests. Over 1600 viruses have been recorded from more than 1100 species of insects and mites. Of these, three families (Baculoviridae, Polydnaviridae, Ascoviridae) are specific for insects and related arthropods. Like entomopathogenic bacteria, they are also very specific to target insects. Entomopathogenic viruses have been listed in 13 families out of a total of 73 known virus families. Among these 13, Baculoviridae family members are the most virulent on different orders of insect-pest including Lepidoptera, Diptera, Hymenoptera, Orthoptera, Isoptera and Neuroptera. In the Baculoviruses, the infection often spreads to the haemocoel and then to essential organs and tissues, particularly fat bodies. Acute infections lead to host death in 5 – 14 days. Mass production of Baculoviruses can only be done in vivo but is economically viable for larger hosts such as Lepidoptera, and formulation and application are straightforward. At present, there are approximately 16 biopesticides based on baculoviruses available for use or under development.

Keywords: Pest management; Biological control; Entomopathogen; Viruse; Baculoviridae

THE MECHANISM OF STERILE INSECT TECHNIQUE AND ITS IMPORTANCE IN TERMS OF SUSTAINABLE AGRICULTURE

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Abstract

Sustainable agriculture is the conservation of natural resources in the long term as well as the creation of an agricultural structure using agricultural technologies that do not harm the ecosystem. One of the principles of sustainable agriculture is organic agriculture. It is essential to maintain the balance and biodiversity in nature by controlling diseases and pests, and to ensure the appropriate use of natural resources and energy in organic agriculture and sustainable agriculture. In agricultural production, pesticides are applied intensely and unconsciously against pests that cause big losses in products. As a result of chemical applications, human health is adversely affected. In addition, plant and animal species disappear, pesticide remains in foods, water and soil resources are polluted and pests gain resistance. When these problems are taken into consideration, alternative control methods should be developed instead of chemical control. The sterilized insect technique (SIT), one of the biotechnoligical control methods, is a control technique that reduces or eliminates the reproductive power of insects. In order to control a pest by sterilization technique, the insect's mating behavior and biology must be well known. The proccess of using the SIT is to release them after mass rearing and sterilized in laboratory. In this method, it is preferred that the female beetle shows only one mating character. The basis of sterile insect release is based on this feature, and the female mating with the sterile insect should not show a new mating desire. The SIT has been used successfully against many insect species in the open field. This technique is carried out in two ways. The first is that the insect is mass-reared under laboratory conditions, sterilized and released to the nature in a way that sterile insects compete with individuals in the insect population found in nature. The second method is to sterilize the existing population in the open field. The SIT can be performed in 3 ways using sterilize by chemosterilants, radiation and gene transfer in insects. Further research is needed to expand and use the Sterile Insect Release Technique.

Keywords: Sterile Insect Technique; Sustainable agriculture; Organic farm; Biotechnological control

TREND BIOTECHNOLOGICAL MANAGEMENT METHODS AGAINST AGRICULTURAL PESTS: MATING DISRUPTION, MASS TRAPPING AND ATTRACT & KILL

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Abstract

Food is essential for the survival of mankind and the main source of food is agriculture. Therefore, agriculture is indispensable for human beings. Unfortunately, there are many pests affect agricultural production, yield and quality negatively. Nonetheless, there are several methods for controlling agricultural pests. Some of these methods including chemical application cause adverse results to environment and human health. For this reason, it is imperative to develop environmentally sound effective alternative management approaches. In this study, it is aimed to discuss pheromone based biotechnological methods with available knowledges and literature. Use of pheromones, especially sex pheromones, has been important in insect pest management for decades. Pheromone based biotechnological management methods are generally considered to be relatively safer and environmentally more acceptable than conventional pesticides. Pheromones are semiochemicals that are produced and received by members of the same species. Pheromones are named according to their missions as sex, aggregation, alarm and trail. Pheromone-based pest management programs include three major approaches: mating disruption, mass trapping and "attract & kill". Mating disruption relies on the principle of preventing pheromone communication between sexes by saturating the area with a high concentration of pheromone so that the male moth is not capable of finding the female. Mating disruption does not kill males, but the inability of males to mate females and thus delays, reduces, or prevents fertilization of females are the desired results. The concept of mass trapping uses species-specific synthetic chemical lures, such as sex and aggregation pheromones and food/host attractants, to attract insects to a trap where they would be confined and die. Mass-trapping with pheromones has the purpose of catching as many insects as possible to reduce the overall numbers. Another type of pheromone-based control system is the "attract and kill" method that is a combination of a sex pheromone and a killing agent, such as an insecticide or pathogen and is also known as "lure and kill," "lure and sterilize", "lure and infect", "attraction and annihilation," "male annihilation", "bait sprays" or "attracticide". Attract and kill may target males, females or both, depending on attracticide use in the system. The combination of the pheromone with a contact insecticide is essential for an acceptable effectiveness of attract and kill approach. Contrary to mating disruption and mass trapping which are not applicable on plots that are too narrow, irregular in shape or smaller than a certain are. low-density target population; isolated target population; a lure competitive with wild females; high lure density relative to pest density; optimal lure placement; and lure deployment before adult emergence and throughout flight period are the key factors that can contribute to success of these biotechnological meth

Keywords: Pheromone; Mating disruption: Mass Trapping; Attract and kill; Pest management

USEFUL AND HARMFUL INSECT SPECIES IN WHEAT AREAS IN VAN PROVINCE

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Abstract

This study was carried out in the wheat areas of Van provinces in 2017 and the insect species found in the wheat areas were determined. The study was carried out in the provinces of Bahçesaray, Başkale, Çaldıran, Çatak, Edremit, Erciş, Gevaş, Gürpınar, Muradiye, Özalp, Saray, and Tuşba in May-August. Harmful and beneficial species were collected using atrap, hand collection and pitfall traps. At the end of the study, 75 species belonging to 9 orders and 48 families were found in 165 different localities. Distribution of species was recorded as 23 species belonging to 13 families in Coleoptera, 16 species belonging to 10 families in Hemiptera, 17 species belonging to 11 families in Diptera, 9 species belonging to 8 families in Hymenoptera, 5 species belonging to 3 families in Orthoptera, 2 species belonging to 1 families in Neuroptera, and 1 species with 1 family in Lepidoptera, Odonoata and Thysanoptera. Extensive information has been obtained about the pest species, their distributions, densities and natural enemies in Van and its environs.

Keywords: Van, wheat, wheat pests and their natural enemies, distributions of wheat pests, fauna

THE IMPORTANCE OF ENTOMOPATHOGENIC NEMATODE AND THEIR ROLE IN THE CONTROL OF AGRICULTURAL PESTS

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Abstract

Entomopathogens are considered environmentally friendly alternatives for suppressing some pests instead synthetic chemical insecticides. Entomopathogens are bacteria, fungi, nematode or viruses that can infect and subsequently cause disease in insects and other arthropods. Entomopathogenic nematodes are interested by researchers and related companies recent years. Entomopathogenic nematodes that parasitize insects, known as entomopathogenic nematodes (EPNs), have been described from 23 nematode families. Entomopathogenic nematode (EPNs) worms are just visible to the naked eye, being about 0.5 mm in length. Two families – the steinernematids and the heterorhabditids - are obligate parasites of insects and used for microbial control. Juvenile nematodes parasitize their hosts by directly penetrating the cuticle or through natural openings. Of all of the nematodes studied for biological control of insects, the Steinernematidae and Heterorhabditidae have received the most attention because they possess many of the attributes of effective biological control agents and have been utilized as classical, conservational, and augmentative biological control agents. Nematodes require moist conditions to operate and have been marketed predominantly against soil pests, such as vine weevil and sciarid fly larvae. However, they may also control foliar pests such as western flower thrips. Unlike other entomopathogens, nematodes are currently exempt from registration in the EU and so have been popular choices for commercialization. Over 60 products are available in Europe.

Keywords: Pest management; Entomopathogen; Nematode; EPN; Steinernematidae

Oral Presentations
ZF-GB-00-Food Science

«YORTICHOKE». A NEW FUNCTIONAL YOGURT WITH PREBIOTIC AND PROBOTIC PROPERTIES USING POWDER OF RICE BRAN AND MICROMANI'S ARTICHOKE

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Abstract

In the present work, was studied the effect of using new lyophilized immobilized cultures of Lactobacilus casei on substrate of rice bran and lyophilized Micromani's artichoke powder on yogurt production. The results showed that the use of these immobilized crops on substrates that contained rice bran and artichoke powder gave similar physicochemical characteristics (pH, titrated acidity, water retention ability and concentration) compared to the corresponding yogurts with traditional cultivation fermentation time achieved with new immobilized crops and traditional fermentation. Finally, the use of these substrates can also lead to the production of probiotics and prebiotics (due to the inulin content of artichoke) of yogurts with all the positive characteristics as are known according to bibliography but also with a particular taste. The study of the behavior of L. casei in yogurt production by the new procedure was maintained at levels that allow the products to be classified as probiotics, and in addition, the presence of inulin kept the microorganisms alive for a longer period, reinforcing the prebiotic role of this new type of yogurt. The final product was named Yortichoke and organoleptic testing and nutritional determinations were performed.

Keywords: Artıchoke, Yogurt

DETERMINATION OF HYDROXYMETHYLFURFURAL (HMF) CONTENT OF POMEGRANATE SOUR PRODUCED IN ŞANLIURFA, GAZİANTEP AND HATAY PROVINCES

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Abstract

Pomegranate (Punica granatum L.) can be consumed as fresh as well as pomegranate juice, syrup, canned food, pomegranate seed dried, jam and wine can be processed into secondary products. Besides, it is added to various foods as colorant and sweetener and especially in our country, it is used as a pomegranate sour to give flavor to various dishes. In this study, pH, titration acidity, water-soluble dry matter, total phenolic content (TPC), anthocyanin and HMF values of 21 pomegranate sour samples from Sanliurfa, Gaziantep, and Hatay were investigated. PH, acidity and water-soluble dry matter content of pomegranate sour were determined in the range of 1.35±0.01-3.32±0.05, 3.55±0.00-16.27±0.01 and 53±0.02-77 ±0.00 Brix, respectively. The amount of TPC was determined between 130±0.05 and 3239 ± 0.08 mg GAE / kg. The TPC of pomegranate sour from Gaziantep province was lower than the others. The highest anthocyanin value was found to be 14.288±0.04 mg/kg in the G4 sample. It was found that the samples taken from Hatay province had lower HMF values than those obtained from Şanlıurfa and Gaziantep provinces. HMF values of 21 pomegranate sour samples collected from all three provinces were determined to be much higher than the standard value (50 mg/kg).

Keywords: Pomegranate sour, Hydroxymethylfurfural (HMF), Phenolic substances, Anthocyanin

DETERMINATION OF PHSICOCHEMICAL AND TECHNOLOGICAL PROPERTIES OF DIFFERENT WHEAT VERIETIES

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Abstract

Wheat is a cereal that has been present in human nutrition since the ealry ages and constitutes the basic nutrient of the people. Besides being a basic nutrient, it meets more than half of the Daily energy need. It is necessary to use suitable varieties in order to obtain high grain yield and quality product. Nowadays, the number of verities with high adaptation to the region is high and efficient ones should be identified, as well as the quality characteristics of varities should not be ignored. Determination of the specific physicochemical properties of different wheat varieties will allow the production of different products from the existing verities. In this study, 6 different genotypes (Pandas, Gökkan, Pehlivan, Kaşifbey, Ceyhan-99, Sagitoria) of the same year grown in Şanlıurfa region had some phsical (1000 kernel weight and hectoliter weight), chemical (moisture, ash and protein content) and technological (wet and dry gluten, gluten index, zeleny sedimentation, modified sedmentation and falling number) quality characteristics were investigated.

Keywords: Wheat, genotype, physicochemical

EVALUATION OF SPRING WATER QUALITY IN BİTLİS PROVINCE

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Abstract

This study was conducted to investigate some physicochemical and microbiological properties of spring waters used as drinking water source in Bitlis province. Water samples were collected from seven different sources (including Başhan, Papşin, Kanimiyan, Seyit Bulağı, Altunkalbur, Çam Sitesi and Mezra Springs) on September 4, 2019 according to the sampling method of the Regulation on Water for Human Consumption (25730, 17.02.2005). Several physicochemical and microbiological parameters (e.g., pH, dissolved oxygen, turbidity, taste, odor, color, ammonium, nitrite, nitrate, alkalinity and acidity, total coliform, colony count at 22-37 oC, Escherichia coli, Pseudomonas aeruginosa, Enterococci) were examined. Membrane-filtration and pour plate methods were executed to determine microbiological parameters. Additionally, physicochemical parameters were determined using standard determination methods. The results were evaluated based on the Regulation on Water for Human Consumption (published in the Official Gazette No. 25730 dated 17.02.2005). According to the analysis, sources Papşin, Kanimiyan and Çam Sitesi springs are in compliance with drinking standards. Sources Seyit Bulağı and Altunkalbur springs, on the other hand, are unable to meet drinking standards due to coliform bacteria contamination. Moreover, Enterococci and coliform bacteria were detected in Source Başhan spring. Also, Enterococci, Escherichia coli and coliform bacteria were detected in source Mezra spring.

Keywords: Bitlis, Physicochemical water quality, Spring water, Microbiological water quality

FATTY ACID COMPOSITION OF BUTTER SOLD IN MARDİN

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Abstract

Milk fat is one of the valuable components of milk. Milk fat has a complex structure consisting of short and long chain fatty acids. It is important in terms of nutrition because it contains at least 80% milk fat from its butter structure and it overwhelms some essential fatty acids that cannot be synthesized by the body. In this study, the fatty acid composition of 31 butter samples sold in Mardin were investigated. The fatty acid composition of the samples was found to be 1.97% butyric acid (C4:0), %1.38 caproic acid (C6:0), % 0.95 caprylic acid (C8:0), %2.49 capric acid (C10:0), % 2.52 lauric acid (C12:0), % 8.50 myristic acid (C14:0), %31.47 palmitic acid (C16:0), %1.88 palmitoleic acid (C16:1), %9.77 stearic acid (C18:0), %26.88 oleic acid (C18:1), %3.93 linoleic acid (C18:2) and %0.63 linolenic acid (C18:3). As a result of the analysis, the presence of EPA (cis-5,8,11,14,17-eicosapentaenoic acid(C20:5n3)) in 3 samples and DHA (cis-4,7,10,13,16,19-docosahexaenoic acid (C22:6n3)) in 24 samples were determined.

Keywords: fatty acids, butter, milk fat

MOLD FLORA OF MOLDY CHEESE AND IDENTIFICATION METHODS-TURKEY

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Abstract

There are many varieties produced in our country using various methods. Molds are generally considered microorganisms that cause spoilage in foods, while mold growth is desirable in some cheese species. Moldy cheeses are produced in our country. Mycotoxins produced by molds pose a risk to public health. Therefore, it is important for public health that molds used in cheese production do not produce mycotoxins, which are the secondary metabolites. This underlines the need to identify the mold flora found in moldy cheese produced especially under uncontrolled conditions. Traditional, molecular, MALDI TOF MS and FTIR methods are used in the identification of microorganisms. In this study, the methods used to identify the microorganism and the mold flora identification studies using these methods are summarized. It was determined that the dominant mold flora of the investigated cheeses consisted of Penicillium spp type molds and also mycotoxin producing mold types in the cheeses. It was found that the traditional method was used to determine the mold flora of moldy cheeses in our country.

Keywords: Moldy cheese, mold, traditional method, molecular method, MALDI-TOF MS and FT-IR.

PHYSICOCHEMICAL PROPERTIES OF POMEGRANATE SEED OIL OBTAINED BY COLD PRESS METHOD

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Abstract

Pomegranate is an economically important plant and has been used by humanity in the fields of food, medicine, cosmetics since the beginning of civilization. In the food industry, pomegranate is evaluated in various ways, mostly processed as fruit juice, and pomegranate seeds separated as a result of this production should be considered as by-products. Due to the increasing interest in various oil sources, the use of these seeds as seed oil sources is emphasized. Recent studies have revealed the positive health effects and functionality of pomegranate seed oil. In particular, cold-pressed oils are obtained without any chemical treatment, strengthening the relationship between naturalness and health. In this study, it is aimed to extract oil from the seeds of pomegranate plant (Punica granatum L.) by cold press method and to determine the properties of pomegranate seed oil. Physicochemical properties of extracted pomegranate seed oil were determined. Accordingly, refractive index 1.519, peroxide number 3.7 meq oxygen kg^{-1}, acid number 1.72 mg KOH g^{-1}, iodine number 75.8, saponification number 203.52 mg KOH g^{-1}, total phenolic content 85.22 mg GAE kg^{-1}, antioxidant activity 60.34 mg TEAC kg^{-1}.

Keywords: pomegranate, pomegranate seed oil, cold pressing

SOME QUALITY AND PURITY ANALYSIS OF VIRGIN OLIVE OILS CONSUMED IN SANLIURFA

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Abstract

Virgin olive oil contains many important major and minor components such as unsaturated fatty acids, polyphenols, vitamin E, carotenoids, sterols, and chlorophylls. Research has shown that these components have very important effects on health. Because it is a valuable product and offered to consumers in higher price ranges compared to other vegetable oils, incidents of imitation and adulteration are more common in olive oil. Adulterations in olive oil have negative effects on consumers both health and economic. In our study, 21 olive oil samples consumed in Şanlıurfa were analyzed in terms of some purity and quality criteria. As a result of analysis, 4 of 21 samples were found to be different seed oil. Only one of the 17 samples fully met the quality criteria specified in the Turkish Food Codex.

Keywords: Olive oil, imitation, adulteration, quality, purity

STUDIES ON QUALITY OF SPRING WATERS IN TURKEY

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Abstract

Water is an indisputably essential compound for the continuity of life. Although most of the world's surface is covered with water, it is a known fact that the natural spring waters included in the fresh water group constitute a small portion of the surface waters. Although Turkey is a country which is not rich in water, the watersheds located in Turkey have differences in terms of climate, population, industry, agriculture, geological structure and flow. These differences affect the quality of spring water used as drinking and potable water as well as other water resources. In this study, the water quality of the source waters used for human consumption in Turkey were inversitagted and associate in order to provide a academic resource in a body. The study included the researches conducted between 2009-2019. The researches taken into consideration have been made taking into account the regulations such as the Regulation on Water for Human Consumption (25730, 17.02.2005), Water Pollution Control Regulation-General Quality Criteria according to Classes of Inland Water Resources (25687, 31.12.2004), TS-266, World Health Organization (WHO, 2006) and the US Environmental Protection Agency (EPA, 2009). It has been observed that spring waters are affected naturally by rock structures, rainwater, anthropogenically by human, and animal sources. In particular, water that was categorized as biologically contaminated should be determined and prevented from human use. In addition, for the water resources that does not meet drinking water standards, some certain processes should be applied. As a result, the reaseraches in this field are positive but not sufficient. Further, the water quality is as important as the amount of water, therefore the studies on this topic should be supported more actively and created awareness in society.

Keywords: National and international legislations, Spring water, Water quality

Oral Presentations
ZF-TBB-00-Department of Field Crops

A HIGH-DENSITY, SEQUENCE-ENRICHED GENETIC MAP OF HORDEUM BULBOSUM AND ITS COLLINEARITY TO H-VULGARE

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Abstract

The Hordeum bulbosum L., a wild grass and close relative of cultivated barley (Hordeum vulgare L.), is an important plant breeding material as inducer of haploid plants in crosses with barley and also as a genetic resource for introgression of disease resistance/tolerance genes into cultivated barley. Genetic mapping of genes introgressed from H. bulbosum is a prerequisite for their efficient utilization in barley breeding, but often hindered due to repressed recombination. The mechanism underlying the reduced frequency or lack of meiotic recombination between H. bulbosum and H. vulgare chromatin in introgressed segments is not understood. It may be explained by lack of genome collinearity or other structural differences between both genomes. In the present study, two F-1 mapping populations of H. bulbosum were analyzed by genotyping-by-sequencing (GBS) and four dense H. bulbosum genetic maps containing 1449, 996, 720, and 943 SNP markers, respectively, revealed overall a high degree of collinearity for all seven homeologous linkage groups of H. vulgare and H. bulbosum. The patterns of distribution of recombination along chromosomes differed between barley and H. bulbosum, indicating organizational differences between both genomes.

Keywords: barley, vulgare, bulbosum, genom, dna

AN ASSESSMENT ON SOME BREAD WHEAT FIELD MIXTURES IN SANLIURFA

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Abstract

The study aimed to investigate some agronomical traits of some mixtures of bread wheat varieties and assess the profitability of promising mixtures. Field trial was carried out in the experimental field of GAPTEAM Talat Demirören station in Şanlıurfa in 2017-2018 growing season. Nine individual and ten mixtures were tested employing randomized complete block design with 4 replications. Some agronomical traits were tested through analysis of variance, correlation and regression. The result revealed that mixtures gave higher grand mean for grain yield (541.50 kg/da) than that of pure varieties (494.16 kg/da). But the pure variety of Dariel placed in the first rank with a 668, 75 kg/da and the mixture 6 were in second rank with 622, 75 kg/da. Pure varieties giving highest and lowest ranks varied greatly for grain yield. Mixtures generally gave the average ranks. Non-significant grand mean differences were observed for some traits. Mixtures gave higher grand mean for marketing price (1.218 TL) than that of pure varieties (1.162 TL). Pure variety of Dariel placed in the first rank with 1,288 TL/kg. Grand mean of net returns for mixtures(651, 82 TL/da) was higher than that of pure varieties (582, 49 TL/da). But, the highest net return was provided from pure variety of Dariel with a 861, 16 TL/da. Mixture 6 placed in the second rank with a 758, 07 TL/da. Statistically significant some positive or negative correlations were found between all characteristics under study vs net return. The coefficients of determinations (R2%) were found to be very low and not reliable between net return vs all characteristics. The result of regression analysis showed that higher yielding varieties generated higher net returns with high coefficient of determination (R2%= 92,5).Mixture of K6 with its' acceptable yield and net return can compete with pure varieties and be recommended for the farmers in the region.

Keywords: bread wheat, field mixtures, profitability

CHARACTERIZATION OF WILD CICER SPECIES COLLECTED FROM ADIYAMAN, DİYARBAKIR AND SANLIIURFA

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Abstract

This research was conducted in Harran University Faculty of Agriculture at Agricultural and Application Field according to randomized block trial design with 3 replications in 2015-2016 growing season. The objective of the study was to characterize some agronomic and plant characteristics of chickpea species (C. reticulatum and C. echinospermum) which were collected from Sanliurfa, Diyarbakir and Adiyaman provinces. 64 wild chickpea genotypes, 4 registered varieties and 1 local genotype were used as plant material. Observations were made on days of first flowering, days of first pod set, growth habit, plant canopy, pod shattering, days to maturity, harvest index, biological yield, parcel yield, 100 seed weight, seed shape, testa structure, seed color, presence of small black spots, seed length, width and seed thickness.

According to the results; days to first flowering from 121 to142 days, days to first pod set from 132 to 149 days, plant canopy width from 1 017.42 to 2 752.10 cm2, days to maturity from 180 to 223 days, harvest index from %16.67 to 49.92, biological yield from 64 to 245 g, parcel yield from 12.24 to 142.57 g, 100 seed weight from 9.13 to 44.61 g, seed length from 6.68 to 9.01 mm, seed width from 4.86 to 6.75 mm and seed thickness ranged from 4.86 to 6.48 mm. Genotypes of C. reticulatum and C. echinospermum species were observed to have higher values than the cultivated species indicating the potential use of wild species in breeding studies.

Keywords: characterization, wild cicer, Cicer reticulatum, cicer echinospermu

CHARACTERIZATION OF WILD CICER SPECIES COLLECTED FROM SİİRT, SIRNAK AND HAKKARİ

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Abstract

The objective of the study was to characterize some agronomic and plant characteristics of chickpea species (C. reticulatum) which were collected from Siirt, Şırnak and Hakkari provinces. The study was conducted in Harran University Faculty of Agriculture at Agricultural and Application Field according to randomized block trial design with 3 replications in 2015-2016 growing season. In the research, 64 wild chickpea genotypes, 4 registered varieties and 1 local genotype were used as plant material. The following results were obtained: days to first flowering from 126 to140 days, days to first pod set from 136 to 148 days, plant canopy width from 2 845.95 to 1 214.81 cm2, days to maturity from 174 to 312 days, harvest index from %22.84 to 64.76, biological yield from 64 to 160.2 g, parcel yield from 31.43 to 101.41 g, 100 seed weight from 8.62 to 44.61 g, seed length from 5.95 to 9.45 mm, seed width from 4.72 to 6.75 mm and seed thickness ranged from 4.47 to 6.69 mm. A large genetic variation was observed for most of the observed traits. Genotypes with desired traits could be used in breeding programs for the development and improvement of new chickpea cultivars.

Keywords: Characterization, wild cicer, Cicer reticulatum

DETERMINATION OF BLACK CUMIN (NIGELLA SATIVA L.) POPULATIONS AND LINES SUITABLE FOR MARDİN DRY CONDITIONS

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Abstract

This study was carried out three times repeatedly to the patterns of randomized blocks on the purpose of defining lines and populations of (16 populations) Black Cumin (Nigella sativa L.) suitable for Mardin arid conditions on farmers lands, in Winter, Tandır Village which is located in center of Mardin, between the years 2017-2018.According to the results of the trail, the values were changed between these rates as follows; Germination duration is 14.33-25.66 days, germination of plants at unit area is 73.00-147.00 number/m², bolting time is 56.66-69.00 days, blooming time is 85.33-95.33 days, plant height 11.55-15.40 cm, branches numbers are 2.40-4.66 numbers/plant, capsule numbers 2.30-5.13 number/plant, number of grains per main capsule 24.36-39.83 number/capsule, grain yield from 11.01-22.13 kg/da, 1000 grain weight 1.96-2.72 g, crude oil ratio %35.03-38.10. As a result, it can be said that it's not supposed to grow black cumin in Mardin with arid climate with a such genotype but for places such as Adana and Eskişehir, it is more likely to grow it with the most productivity.

Keywords: Black cumin (Nigella sativa L.), Populations, Yield.

DETERMINATION OF THE ADAPTATION AND SOME AGRICULTURAL CHARACTERISTICS OF TUBEROSE (POLIANTHES TUBEROSA L.) UNDER THE HARRAN PLAIN CONDITIONS

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Abstract

This study was conducted to determine the adaptation and some agricultural characteristics of Tuberose (Polianthes tuberosa cv. 'Single') under the conditions of Harran Plain in Southeastern Anatolia of Turkey during summer growing seasons in 2014 and 2015. The trial was arranged in randomized complete block design with three replicates. In the study, in each two years of the research, besides phenologic observations such as emergence date (2-5 May), days to opening of first floret (10-13 July), flowering period (26 days), vase life of spike (8 days), vegetation time (220 days) and bulb harvest date (5-8 January); the plant height (65.33 cm), leaf height (35.66 cm), number of leaves (20 numbers/plant) number of spikes (1.66-2.00 numbers/plant), number of florets (28 florets/spike), mature tuber circumference lenght (10.33 cm), mature tuber weight (57.66 g), number of tubers (7.66 tubers/plant), new tuber sizes (2.5-9.6 cm) were investigated. Statistical analyses indicated that it is possible to say both flower and tuber production of Tuberose in marketable amount and quality can be obtained, and that it has potency to be an alternative product for Southeastern Anatolia Region of Turkey.

Keywords: Tuberose; Polianthes; Vase Life; Flowering; Tuber

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DETERMINATION OF THE PERFORMANCES RELATED TO YIELD AND YIELD COMPONENTS OF SOME OAT (AVENA SATIVA L.) CULTIVARS IN VAN ECOLOGICAL CONDITIONS

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[1]Van Yüzüncü Yıl University

Abstract

This study was conducted to determine the performance of 12 Oats (Avena sativa L) varieties (Albatros, Seydisehir, Kahraman, Yeniceri, Dirilis, Fetih, Sarı, Kırklar, Arslanbey, Chekota, Haskara and Faikbey) in Van ecological conditions during the 2017-2018 vegetation period in terms of yield and yield components. The research was carried out in three replications according to randomized plot experimental design.

In this study, in order to take advantage of winter sowing and at the same time to prevent the damage of oats from the winter, sowing was carried out in December as embedding. In the research, the number of panicles per square meter, thousand grain weight, number of grains per panicle, panicle length, plant height, grain weight per panicle, grain yield and total yield were examined.

As a result; the differences between the varieties were significant ($P<0.05$). Grain yields were between 3463.3-5030.2 kg ha^{-1} and were obtained highest from Seydisehir variety and least from Fetih variety. Total yield ranged between 8225.7-25648.6 kg ha^{-1} and Faikbey was the highest and Fetih was the least. In terms of grain yield, it was observed that varieties perform above 4000 kg ha^{-1} in general, and Faikbey, Chekota, Kahraman and Seydisehir varieties performed above 20000 kg ha^{-1} in terms of total yield. The Fetih variety had the lowest number of grains per panicle, panicle length, plant length, grain weight per panicle, grain yield and total yield performances. It was determined that when yield and total yield was based, according to one year results Faikbey, Chekota, Kahraman and Seydisehir varieties could be preferred under the Van ecological conditions and that cultivation could be done with embedding sowing method.

Keywords: Van, Oat (Aveana sativa L.), Yield components, Variety performance

DETERMINATION OF YIELD AND SOME AGRONOMIC CHARACTERS ON VARIETIES AND POPULATIONS OF CUMIN (CUMINUM CYMINUM L.) IN HARRAN PLAIN UNDER IRRIGATION CONDITIONS

İSLİM KOŞAR[1]*, ABDULHABİP ÖZEL[1], İBRAHİM ALSAN[1], MEHTAP SARAÇOĞLU[2], AYŞE COŞKUN[1], HALİL HATİPOĞLU[1], İBRAHİM CÖMERT[1]
[1]Harran University [2]GAPTEAM

Abstract

This study was carried out in order to determine the yield and some agronomic characters on variety and populations (2 varieties and 14 populations) of Cumin (Cuminum cyminum L.) under irrigation conditions in randomized block design with four replicates at Koruklu Talat Demirören Research Station in Harran plain, Şanlıurfa between 2010-2011 growing seasons. According to the results of the trial, the values were obtained in trail as follows; grain yield from 6.2 to 108.2 kg/da, essential oil ratio 1.9-3.9 %, essential oil yield 0.2-3.0 kg/da, 1000 grain weight 2.3-3.3 g, plant height 28.7- 39.4 cm, number of branches 5.3-10.0 number /plant, number of umbel per plant 13.3-71.1 number/plant, the number of grains per main umbel 22.6-33.4 number/umbel, seed retention ratio per main umbel from 79.3 to 90.0 %. The highest yields and highest essential oil yield were recorded in Eskişehir population.

Keywords: Cumin (Cuminum cyminum L.), populations, yield essential oils

DETERMINATION OF YIELD AND YIELD COMPONENTS ON POPULATIONS OF CAPERS IN ŞANLIURFA CONDITI1ONS

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[1]Harran University

Abstract

This study has been carried out in 2007-2011 growing periods in Koruklu Research Stations, for the purposes of determining the yield and yield components in Capers (Capparis sp.) in Şanlıurfa conditions. As the material, Capparis sp seeds collected from the natural flora of the Southeastern Anatolia Region together with seedlings obtained from seeds obtained from the Aegean Agricultural Research Institute were planted on the field 3x3-meter intervals during March-2007. Planted seedlings during 2007-2011 growing periods, has been taken observations the number of buds (unit / plant), plant height (cm), canopy diameter (cm), number of primary branches (unit / plant), The length of the arm (cm). Plants according to the developments habitus (leaning, semi-recumbent, perpendicular) has been grouped and identified to standard deviations of the mean values of the characteristics.

Keywords: Capers, Yield, Populations

EFFECT OF DIFFERENT SOWING DATE AND PLANT POPULATION ON SEED COTTON (GOSSYPIUM HIRSUTUM L.) YIELD AND FIBER QUALITY CHARACTERS IN SEMI ARID CONDITIONS

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Abstract

This research was planned to investigate the effect of single, twin row and narrow row sowing systems on the yield and yield components of cotton (Gossypium hirsutum L.) in different sowing dates under the Harran Plain conditions. The study was carried out during the growing season of 2018 at the Eyyubiye Campus research area of the Harran University Faculty of Agriculture. Seed of cotton cultivar was sown according the planting times and plant density pattern with the randomize complete split plot experimental design with the three replications. Planting dates (20 April, 5 May, 20 May and 5 June) pattern were kept in main plot and planting pattern (interrow: 70 cm, 35 cm ve 70 cm x 20 cm x 70 cm) in sub plot by using plot size 4.2 m x 10 m and intrarow spacing was 10 cm.

As a result of the research; with the planting date to delay; seed cotton yield, seed cotton yield per plant, earliness ratio, number of sympodia per plant, number of boll per plant, seed cotton weight per boll and ginning outturn were decreased; plant height, seed index and fiber length (partially) were increased but, fiber strength, fiber fineness and fiber uniformity values were not affected. Also, with increase in plant density; seed cotton yield, plant height and seed index were increased; earliness ratio and number of sympodia per plant, number of boll per plant, seed cotton yield per plant and seed cotton weight per boll were decreased and ginning outturn, fibre strength, fiber fineness, fibre length and fibre uniformity values were not affected by the planting pattern. As a result, the cotton seed should be sown between 20 April and 20 May and depending on the planting pattern, the harvesting machines should be modified.

Keywords: Harran Plain, cotton, sowing date, twin row, seed cotton yield, fiber characters

EKOLOGICAL AGRICULTURE, GOOD AGRICULTURAL PRACTICES AND SUSTAINABILITY IN AGRICULTURE IN SANLIURFA

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Abstract

Turkey with uncontaminated agricultural resources with high production potential in the field of ekolojik agriculture retains its position as one of the world's leading producer countries. Modern countries make great efforts to transfer their agricultural lands and water resources to future generations without polluting, destroying their natural resources and to preserving natüre In order to ensure the sustainability of agriculture, to provide healthy food to the society and to produce agricultural products with high added value, it is important to develop and expand ekological farming in order to increase the economic income level of producers. Sanliurfa province has high agricultural potential, climate and geographical location is very suitable for agricultural production and is in a position suitable for ecological agriculture. Due to its high production potential, the development of ecological agriculture in Şanlıurfa province can cause big increases in the production of ekological products in the country. In recent years, as in all countries, ther Nitekim, 2000 yılına kadar büyük bir değişiklik olmamıştır, özellikle 2000'li yıllardan sonra, ekolojik tarımın üretici ve üretim miktarında büyük artışlar olmuştur.e has been a great increase in ecological agriculture and ecological production in our country. Also for people it is getting more and more conscious about their health formed have been a great market share. In this study, the things to be done for the sustainability of agriculture in Şanlıurfa province will be revealed, ecological agriculture, conventional agriculture and good agricultural practices will be examined and support will be given to those interested in terms of information and documents.

Keywords: Good Agricultural Practices, Ecological Agriculture, Agricultural Sustainability, Preservation natüre, Sanliurfa Province

IMPORTANCE OF ORGANIC BARLEY

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Abstract

Due to the rapid increase in the population in the world and in our country, cereals have an important place in human nutrition. Although barley is not used directly in human nutrition in our country, it is an extremely important plant in terms of animal nutrition. Barley is an important raw material used in animal protein production, flour and various industrial organizations and human nutrition. In addition, it is an important cultivation plant for low and irregular rainfall places due to being resistant to salt earlier than wheat (Kendal 2013). There is a need to increase barley yield per unit in the world to meet the needs arising from the rapid development of the world population. Appropriate barley variety and fertilization can help increase barley production, but yield depends on sufficient nutrients and organic matter in the soil. Turkey's soils, except for restricted areas are generally poor in organic matter (Dinç et al., 2001). We should prefer organic agriculture which protects the balance in nature, maintains the balance in soil fertility, helps to control diseases and pests, provides quality products by leaving organic matter in the soil and enriches our soil in terms of organic matter.

Keywords: wheat, organic manure, importance, agriculture

INVESTIGATIONS ON YIELD COMPONENTS OF ONE YEAR ITALIAN GRASS PLANT (LOLIUM MULTIFLORUM L.) VARIETIES IN ŞANLIURFA CONDITIONS

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Abstract

This research, which was conducted to determine the adaptation ability of Italian Grass (Lolium multiflorum L.) under the conditions of Şanlıurfa, was carried out in Harran University Faculty of Agriculture Osmanbey Campus, Agricultural Research and Application Field in 2017-2018 winter crop growing period with 3 replications. Seven different tetraploid Italian grass varieties from private companies were used in the experiment age yield, hay yield, dry matter yield (kg/da), crude protein content, crude protein yield and seed yield were investigated. According to the results, fresh herb yield 1798.06–2764.75 (kg/da), dry herb yield 484.00-746.00 (kg /da), dry matter yield 435.00-671.00 (kg /da), crude protein content 10.03-12.13 (%), crude protein yield 52.34-90.49 (kg /da) and seed yield 48.40-84.18 (kg /da) it was found that between.

Keywords: Lolium multiflorum, grass adaptation, dry matter yield, raw protein ratio

MEDICINAL AND AROMATIC PLANTS SOLD IN HERBAL PLANTS IN CEYLANPINAR DISTRICT CENTER AND THEIR USAGE

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[1]Harran University

Abstract

This study was carried out in Ceylanpınar district center in February-June 2019. The purpose of this research, disposing of medicinal aromatic and food supplements for sale in Ceylanpınar and also to determine the phytotherapeutic properties of these plants. Within the scope of study, the herbailsts being in şanlıurfa were visited and the list of the products that they have were recorted in to inventory. Plants P.H. Davis' scientific name using the flora of Turkey and the East Aegan Island has been identified by taxonomic diagnosis of these species. As a result of this study plants sold in ceylanpınar city center 31 plant taxa belonging to 20 families that are used both as vegatables and as medicine are documented according to latin and used parts and their uses. This study will be done in later ethnobotanical research; It will set an example for young researchers and will also produce an inventory of medicinal and aromatic plants for our country.

Keywords: Viranşehir plant's, Medicinal plants, Willd-consumed plants

NUTRITION OF PLANTS COMMON LIFE AND MICORIZA

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Abstract

Mycorrhiza forms a relationship based on the mutual benefit of both organisms as a result of the interaction between the micelle structures it forms and the roots of many plants. In this relationship, mycorrhizal fungi provide carbon and essential organic substances from the plant for its development, while helping the plant to remove nutrients, salts and metabolites with water. Thus, both parties benefit from this interaction. The most important of the mycorrhizal groups used in agriculture in different fields are the endomycorrhiza and ectomycorrhiza. This symbiotic relationship between mycorrhizal fungi and plant roots is one of the best examples of the exchange of nutrients between the autotrophic host and the heterotrophic organism, which contributes greatly to the understanding of ecological balance in nature. It has been determined by various studies that a large number of plants form a symbiotic partnership with fungi. In this review, the effects and importance of mycorrhiza use in many areas of agriculture, especially on soil breeding and fertility, plant development, plant diseases, and sustainable agriculture are given, and the subject has been tried to be clarified.

Keywords: Plant Nutrition, Symbiotic Life, Mykoriza

OPTIMIZATION OF MATURE EMBRYO BASED REGENERATION OF TURKISH BREAD WHEAT CULTIVAR YÜREĞİR-89 (TRITICUM AESTIVUM L.)

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[1]Van Yüzüncü Yıl University

Abstract

The objective of this study was to optimize tissue culture and regeneration parameters of mature embryo based culture of Triticum aestivum cv. Yüreğir 89. The effects of type of auxin hormone at different concentrations and dark incubation periods on regeneration capacity were evaluated. Two different hormone types 2,4- dichlorophenoxyacetic acid and picloram were used at three different concentrations 2, 4 and 8 ppm. Mature embryo derived calli were incubated in sixdifferent induction media at dark for 4 and 6 weeks for initiation of primary callus induction. After dark incubation periods, average callus fresh weight and primary callus induction rate were determined. Yüreğir primary callus induction rate was 92.5 % for 6 weeks old calli in 6W2D medium and 86.75 % for 4 weeks old calli in 4W8P medium. The primary calli were transferred to embryogenic callus induction medium. After embryogenic callus induction, embryogenic calli were transferred into hormone free regeneration medium. The average callus fresh weight of 6 weeks old and dark incubated Yüreğir calli was between 25.25-44.00 mg. The maximum primary callus induction was observed in 6W2D medium for this condition. The average callus fresh weight of 4 weeks old and dark incubated Yüreğir calli was between 12.80- 22.50 mg. Primary callus induction rate was 86.75 % in 4W8P medium. Hormone type and concentration significantly affected both of 4 and 6 weeks old and dark incubated Yüreğir average callus fresh weight. There was no highly regeneration for Yüreğir mature embryo based culture in this study. The maximum rate was 5 % in 6W2D medium. The other explant sources for Yüreğir cultivar should be better for its regeneration.

Keywords: Wheat, mature embryo, regeneration, auxin concentration, Yüreğir-89

PLANTS COLLECTED AND CONSUMED IN NATURE IN VIRANŞEHİR DISTRICT OF ŞANLIURFA

MUSTAFA ASLAN[1], NİHAT BATAN[1]
[1]Harran University

Abstract

Located in the natural flora of the town of Viransehir and People in this town are informed about plants consumed traditionally. Most of the plants consumed as folk medicine and nutrients in this district are located in the flora of the district. Geographically, the majority of the district is located within the borders of Karacadağ. As in the whole of Anatolia, these plants, which make up a medical and food source in Viransehir, are collected and consumed from nature.This study was carried out to determine the inventory of both fresh food source and medicinal plants consumed among the people in Viranşehir and its vicinity. Plants sold daily in the city center of Viransehir were identified both in the field and in the markets and photographs and samples were taken The taxonomical identification of these plants species was made using the scientific name of the P.H. Davis' flora of Turkey and East Aegan Island. As a result of this study 29 plant taxa belonging to 14 families used for food and medical purposes have been identified. Local and scientific names of these plant's used parts and the purposes of use are listed

Keywords: Viranşehir plant's, Medicinal plants, Willd-consumed plants

SCREENING OF ADVANCED GENERATION LENTIL MUTANT GENOTYPES FOR TOLERANCE TO IMIDAZOLINONE HERBICIDES

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Abstract

The lentil (Lens culinaris Medik) is one of the most important grain legumes in Turkey. It is generally regarded as a poor competitor against weeds, and its sensitivity to herbicides is a major hurdle in its production. This research aimed to determine the tolerance of selected lentil genotypes at M5 generation to imidazolinone herbicides. Currently, there is no imidazolinone herbicide registered for use in lentil production in Turkey. A total of 145 genotypes, including 139 M5 lentil genotypes derived from Ethyl methane sulfonate (EMS) mutagenized seeds of cultivar Firat-87 and 6 lentil cultivars (Firat-87, Cagil and 4 Canadian origins) were screened for imazamox herbicide tolerance.Experiments were carried out in the plastic house and also in the field in a randomized complete block design (RCBD) with three replications. Herbicide was applied with an extra 50% of the recommended dose (1500 ml/ha of or 60 g a.i/ha) of imazamox. Herbicide was applied when the plants were between 5-6 nodes. Response of the genotypes to the herbicide was evaluated by measuring the plant height as a sign of the growth and also by visual scoring with a 1 to 5 sclae (1= highly tolerant, 5= highly sensitive) after 45 and 60 days of spraying in the field experiment, while in the plastic house experiment, the evaluation was recorded after 30 and 60 days of spraying in a plastic house experiment. Results showed large variations among the genotypes for tolerance to the imazamox herbicide. After 60 days of spraying, most of the genotypes showed some symptoms of recovery in both of the locations. Four genotypes (IMI-128, IMI-130, IMI-138 and IMI-139), displayed high herbicide tolerance in both experiments.These genotypes can be used in breeding programs for developing herbicide-tolerant lentil cultivars.

Keywords: Lentil, imidazolinone tolerance, weed control, mutation breeding

THE EXPRESSION AND INHERITANCE OF 100 SEEDS WEIGHT AND GROWTH HABIT TRAITS ACROSS TEN ADVANCED GENERATIONS WILD CROSSED WITH CULTIVATED CHICKPEA NESTED ASSOCIATION MAPPING (NAM) POPULATIONS.

ABDULKARİM LAKMES[1], ABDULLAH JHAR[1], ADRİAN BRENNAN[1], ABDULLAH KAHRİMAN[1]
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Abstract

Chickpea (Cicer arietinum L.) is one of the most important food legume crops in the world. Chickpea is valued for its nutritive seed composition which is high in protein content and used increasingly as a substitute for animal protein. The high-quality seed has the potential to attract premium prices. Furthermore, 100 seed weight is one of the most important consumers preferred trait that influences the economic return of farmers. Plant architecture plays an important role in the development of machine harvestable for chickpea genotypes and also, to increase the yield. Hence, breeding for desirable traits is very important to develop new chickpea genotypes. This study was aimed to identify inheritance pattern and determine new alleles for growth habit and 100 seeds weight in NAM populations of chickpea obtained by wide crosses.

A total of ten populations were used in the study. crosses were made between Gokce, the cultivated variety, and wild genotype of C. reticulatum and C. echinospermum. Based on frequency distributions, inheritance pattern of 100-seed weight showed continuous distribution indicating polygenic control of the trait. Qualitative evaluation of growth habit based on Chi-square goodness of fit test showed that the four populations accepted a single gene action, also four further populations accepted two genes action. In addition to 100 seeds weight was positively correlated with erect growth habit for 6 populations.

Keywords: Chickpea (Cicer arietinum), Nested Association Mapping (NAM), Growth habit, 100 seeds weight, Genetic control.

AMERICAN SOYBEAN VARIETIES CULTIVATION UNDER THE CONDITIONS OF CHUY VALLEY KYRGYZSTAN

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Abstract

The intensification of the livestock production of the Kyrgyz Republic attaches priority of soybean cultivation - unique leguminous crop with a very high protein content up to 45%. According to its amino acid composition of soybean protein is comparable with beef protein, and they are ten times cheaper raw material of its production costs. A solid foundation for further development of the soybean breeding is highly productive varieties and modern cultivation needs to be used.

Keywords: soybean, oil content,moisture.

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BIOCHAR APPLICATION EFFECTS ON EGGPLANT (SOLANUM MELONGENA) GROWTH AND SOIL PARAMETERS UNDER SALINE AND NON-SALINE SOIL CONDITIONS

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Abstract

It was aimed to determine the effect of two different biochar materials (tobacco stalk (TS) and cotton stalk (PS)) on eggplant growth and some parameters of saline and non-saline soils. In this context, a greenhouse experiment was established by growing eggplant plants under controlled conditions using three different doses (0% - 0.3% - 0.6%) of PS and TS in the soils taken from the saline and non-saline regions of the Harran Plain.

In the study, some chemical characteristics of soils (organic matter (OM), cation exchange capacity (CEC), soil reaction (pH e), electrical conductivity (EC e) were determined. In addition, plant height, fruit length, fruit number, fruit diameter, fruit weight, pH and EC values of fruit juice, chlorophyll content, plant fresh biomass weight and plant fresh root weight analysis in plant parameters were investigated. Results indicated that increasing amounts of PS doses compared to control (0%) gave more effective results in terms of the parameters examined in the non-saline soils. In terms of the effect of doses, it was generally determined that 0.3% dose was more effective. In saline soils, PS was found to be more effective than the control in applications. It has been observed that there is an effective increase with increasing dose rates as well. Overall, it was concluded that biochar effects were not statistically significant (p <0.05) but doses of biochars showed statistically significant (p <0.05) effects on both biochar applications in both soils (saline and non-saline soils). Application of biochars decreased the stress effects of salt on plants comparing the control results on saline soils.

Keywords: Salinity, biochar, tobacco stalk, cotton stalk, eggplant

BRASSINOSTEROIDE ENHANCES GERMINATION OF SEED OF WHEAT UNDER SALINE CONDITION

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Abstract

It was aimed to screen five cultivars of wheat for their differential tolerance to salt stress and also identify the most appropriate doses of Brassinosteroides (BS) mitigating deleterious effects of salt on germination of seeds of different wheat cultivars. The seeds of five maize cultivars were soaked for 24 h in solutions containing five levels of BS (1, 2, 3, 4 ve 6 µM). Germination percentage, lengths of plumules plus radicles, fresh weight of germinated seeds and soluble protein content were reduced by salinity stress. However, time for 50% seed germination and total soluble sugars were increased by salinity stress. Saline stress was less detrimental to tested parameters in Pandas and more detrimental in Altıntoprak 98. BS increased the fresh weight of germinated seeds in most cases, but it significantly reduced soluble sugar in hypocotyls mostly. Also, of five BS levels used, there seemed to be no consistent dose being more effective, but in a few cases, BS at 3 and 4 µM doses seems to be a bit more effective mostly. It can be concluded that the tolerances of wheat cultivars to salinity stress differed and the effectiveness of BS as a seed treatment is dependent on doses and cultivars.

Keywords: Seed germination; Salinity stress; Wheat; Brassinosteroides

DEHYDROGENASE ENZYME ACTIVITY OF SOIL UNDER DIFFERENT FRUIT TREES IN ARID AND SEMI-ARID REGION

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Abstract

Dehydrogenase is one of the enzymes used in the determination of biological activity and biomass in the soil. At the same time, all enzymes are biological fingerprints and biological indicators of soils. This enzyme is most affected by the soil's carbon (C) and nitrogen (N) content. The dehydrogenase can be affected by numerous conditions existing in the soil at varying levels. Soil samples were taken at 0-20 cm depth from the fields occurred in the same parent material but under different cultivations (land uses; almonds, pistachio, vineyards etc) and they were used for dehydrogenase enzyme activity analyses after air dried and 2 mm sieved. According to the enzyme analyses results, dehydrogenase enzyme activities of the soils ranged from 128.68 to 396.38 µg TPF g-1 dry soil 24 h-1 with the lowest values 128.68 - 133.15 µg TPF g-1 dry soil 24 h-1 (130.91 ± 1.99) in almond fields and the highest values 249.15 - 396.38 15 µg TPF g-1 dry soil 24 h-1 (322.76 ± 2.01) in vineyard areas. The values obtained from the other fields were found between the results of vineyard and almond soils. The results showed that the ecosystem status of soils under different fruit species were normal. Soil enzymes are important catalysts of soils. Therefore, the factors such as soil reaction, C and N content, nutrient status etc. have an effect on the enzyme activity. Earlier studies have shown that bacteria species are dominant in soils with high dehydrogenase enzyme activity, which has also been mentioned in our previous studies. Dehydrogenase enzyme activity has confirmed the information given above lower of soil C: N ratio, neutral or slightly basic pH, dry and hot the climate. All of these showed that enzymes can be used as a good indicator of the good management mechanism of soils.

Keywords: dehydrogenase, calcareous soils, orchards fields, TPF

DETERMINATION OF CO2 OUTPUT AMOUNT IN ŞANLIURFA-HARRAN PLAIN SOILS

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Abstract

Under the influence of the developing world and the increasing population, it has negatively affected the natural gas cycle change in the earth and caused global warming. CO2 has an important place among the greenhouse gases causing climate change. CO2 emissions not only result from energy, industrial activities but also from agricultural activities. There are not enough studies on CO2 emission and annual budget in our country.

In this project, CO2 transfer was determined on the agricultural land which was not cultivated at Talat Demirören Research Station in cooperation with the ITU Meteorological Engineering Department Harran University Faculty of Agriculture Department of Soil and Plant Nutrition and GAP Agricultural Research Institute. This research was conducted with internationally accepted methods and technology. In this study, data for 2018 will be presented.

Keywords: climate change, CO2 emission

DETERMINATION OF CO2 OUTPUT IN COTTON CULTIVATED AREAS IN ŞANLIURFA-HARRAN PLAIN SOILS

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Abstract

Accurate determination of our national greenhouse gas emissions It is of great importance that climate change and our greenhouse gas budget are determined accurately. Due to the increasing population and the impact of technology, CO2 is of great importance among the greenhouse gases causing emissions increase and climate change. In this project, CO2 transfer has been determined in the agricultural land which is not cultivated at Talat Demirören Research Station in cooperation with the ITU Meteorological Engineering Department Harran University Faculty of Agriculture Department of Soil and Plant Nutrition and GAP Agricultural Research Institute. In 2018, CO2 measurements released from the soil during the cotton season will be given in the cotton cultivated area considering the differences that will occur in the product type.

Keywords: climate change, CO2 emission, cotton

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DETERMINATION OF TOTAL ELEMENT CONCENTRATIONS OF AGRICULTURAL SOILS RELATED TO DISTANCE AWAY FROM MARDIN MAZIDAĞI PHOSPHATE DEPOSITS AND PHOSPHATE PROCESSING FACILITIES

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Abstract

In this study, the average element concentrations of the soils were investigated by using the total element analysis in the soil samples taken from the agricultural fields located near the phosphate beds and phosphate treatment plant in Mazıdağı district of Mardin province. The average concentrations for Al, B, Ba, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, P, Pb, Si and Zn were 44745 mg kg-1, 306 mg kg-1, 143.70 mg kg-1, 43424 mg kg-1, 6.47 mg kg-1, 20.30 mg kg-1, 113 mg kg-1, 37.45 mg kg-1, 35712 mg kg-1, 6634 mg kg-1, 5540 mg kg-1, 836 mg kg-1, 203 mg kg-1, 100 mg kg-1, 6981 mg kg-1, 9.03 mg kg-1, 165.73 mg kg-1 and 121.69 mg kg-1 respectivelly.

When the correlation between the phosphate deposits and soil samples was examined depending on the distance, total Mg element concentration was found to be statistically very significant (r: 0.92**). When the correlation between the phosphate treatment plant and soil samples was examined depending on the distance, total Co element concentration (r: 0.82 **), total Mn concentration (r: 0.81 **) were statistically significant while significant correlation was found between total Pb concentration (r: 0.77 *).

In the study, depending on the distance away from the P deposits, corelation of Ba, Cd, Co, Cr, Cu, Mn, Na, Pb, Zn, total element concentrations were statistically insignificant ($p>0.05$) and correlation of V and P element concentrations were significantly negative ($p <0.05$).

Depending on the distance away from the factory, correlation of Cd, K and Mg total element concentrations were statistically insignificant ($p>0.05$) and correlation of Ca element concentrations were very significant ($p <0.01$).

Keywords: phosphate deposits, heavy metals, phosphate processing, soil pollution, environment

EFFECT OF MELATONIN AND EPI-BRASSINOSTEROID APPLICATIONS ON PLANTS GROWN UNDER SALT STRESS AND BORON TOXICITY

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Abstract

Salt stress and boron toxicity are one of the major abiotic stress factors that limit crop productivity by affecting the development of plants in arid and semi-arid regions. Salinity and high boron content in the arid and semi-arid regions of the world are important problems limiting agricultural production. Since both of these issues have significant high variability within the land, taking into account this variability in land use in production and their improvement is imperative in terms of time, labor and cost. Epi brassinosteroid (EBR) and melatonin, one of the growth regulating hormones secreted by plants against these environmental stress effects, Among the most prominent features of the plant can be considered to increase the tolerance of the plant against the stress that may occur due to the effect of the environment. Various studies have also shown that applied melatonin and EBR hormones reduce stress parameters significantly against environmental stress factors such as salt stress and boron toxicity. In this study, a review of the effects of EBR and melatonin hormones applied to plants in soils with boron toxicity as well as salinity problems is arranged as a review.

Keywords: salt stress, boron toxicity, melatonin, epi-brassinosteroid

EFFECT OF NITRIFICATION INHIBITOR ON N2O EMISSION FROM FERTILIZED SOILS: A REVIEW

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Abstract

Nitrogen (N) is the plant nutrient element that most often limits primary production in terrestrial ecosystems and has been introduced into the biosphere mainly as reactive N through the chemical and biological fixation of dinitrogen (N2). Denitrification is the most important process that removes reactive N from the biosphere and returns it to the atmosphere, which includes all or parts of the sequential reduction of NO3- to NO2-, NO, N2O and N2. Whereas N2 is the ultimate end product of denitrification, other intermediate gaseous forms of N, such as N2O, can also be produced through denitrification. The increase in atmospheric N2O concentrations is of growing concern, since N2O has been considered not only to be a potent greenhouse gas (GHG), but also be the most important destroyer of stratospheric ozone in the 21st century (Ravishankara et al., 2009). The use of Nitrification inhibitors has been found to reduce N2O emissions from liquid manure and synthetic N fertilizers and increase the nitrogen use efficiency of fertilizers. Most NIs retard microbial oxidation of ammonium (NH4) by depressing the activities of nitrifying bacteria in soil. Therefore, mineral N is stabilized in the rather immobile form of NH4 instead of being transformed to nitrate (NO3) (Merino et al., 2005). In this work, we aim to present the interaction between nitrification inhibitors use and N2O emissions in nitrogen fertilized soils.

Keywords: Nitrification inhibitor (NIs), Nitrous oxide (N2O), Nitrification, Denitrification

EFFECTS OF INCREASED BORON APPLICATIONS ON SALT DAMAGE IN LETTUCE PLANT

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Abstract

Boron (B) deficiency is one of the major problems limiting crop production. Salt stress is an important agent in the emergence of B toxicity problem. The recent studies indicated that the damage caused by salt stress increases under B deficiency. This study was aimed to determine the effect of increasing doses of B (0 (control), 0.1, 0.5 and 1.0 µM) under saline and non-saline conditions in aquaculture on B concentration in green parts, green parts and root dry matter yield of iceberg and flat leaf lettuce cultivars. The results showed that salt application compared to the control application reduced the green part and root dry matter yields in both plant varieties. Increased B application in both cultivars increased the green part dry matter yield up to 1.0 µM dose. The increase in the application of 0.1 and 0.5 µM doses in the iceberg cultivar was 19 and 66%, respectively, compared to control plants. In addition, increasing doses of B increased the B concentration of green parts and root as expected. The increases were lower under salt application than the conditions in which B was not applied. The results revealed that B plays an important role in alleviating the salt damage of the plant, but the level of plant B uptake increased under saline conditions. This case was differed between varieties. In addition, the differences in resistance to B deficiency and salt toxicity were observed in lettuce varieties. Thus, the results concluded that B application under saline conditions would be important.

Keywords: Boron application, Salt application, Dry matter yield, Lettuce

ESTIMATION EFFECT OF LAND CONSOLIDATION ON THE LANDUSE CHANGES: A CASE STUDY AT THE BOZOVA SULUCAKAÇAR VILLAGE

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Abstract

The correct use of agricultural land resources directly affecting the world economical status. In the Turkey numerous farmers making their agricultural activities at the small and shapeless field. The ministry of agriculture and forestry trying to complete the land consolidation of Turkey for the gain area and make a contribution to the economy. The consolidation efforts are often made in areas where the implementation of irrigation projects in Turkey is made in limited areas. GAP project, which is the water of life in the agricultural areas in the region, increased the irrigated agricultural areas in the region and the initiation of consolidation projects in the region caused changes in the product patterns. The aim of the study is to determine the land changes occurring before and after the consolidation of Sulucakaçar village of Bozova district, which is determined as the study area, by remote sensing and GIS techniques. For the purpose of comparison, Güvenli village of Siverek district with different product patterns and ambient conditions was chosen. Landsat 5 TM and Sentinel 2 images before and after consolidation have been downloaded. The study areas were digitized with remote sensing and ArcGIS techniques and land use maps were produced. By calculating the areas of land classes, spatial changes occurred before and after consolidation was determined. As a result of the research, it was determined that the rocky and wheat areas decreased in Sulucakaçar and Güvenli village after consolidation. It was determined that there was an increase in peanut and cotton fields in Sulucakaçar district and in cotton, corn and barley fields in Güvenli village.

Keywords: Consolidation, GIS, remote sensing, land use

FE AND ZN NUTRITION OF LENTIL GROWN UNDER DRY CONDITIONS IN SOME REGIONS OF SURUC PLAIN

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Abstract

This study was conducted in order to determine Fe (Iron) and Zn (Zinc) levels of lentil grown under dry conditions in some regions of Suruç District of Sanliurfa Province. The study was carried out in 2017 in the Suruç District's agricultural lands in Dinlence, Kara, Boztepe, Oymaklı, Büyüksergen, Yalpı and Topçular neighborhoods. Iron contents of all soil samples were found to be higher than 4.5 mg/kg and evaluated as "High''. The average Fe concentration of the soils was found to be 5.41 mg/kg. 17 of the soil samples examined were found to have zinc content higher than 0.50 mg/kg. In the other three samples, zinc contents were found to be less than 0.50 mg/kg and zinc level was evaluated as "Low". The average Zn concentration of the studied soils was determined as 0.60 mg/kg. Iron (Fe) and zinc (Zn) analyzes of plant samples collected from 20 different agricultural plots were performed under laboratory conditions. As a result of the analyzes; The lowest zinc concentration was determined In Yalpı District, in the area of 134/2 island /plot number 21.15 mg/kg and the highest concentration was determined as 55.10 mg/kg in the land area of 120/15 island/parcel number respectively. The lowest iron concentration was determined as 99.12 mg/kg on land with 128/3 island plot number in Kara neighborhood and the highest value was determined as 185.45 mg/kg on land with 118/1 island/parcel number in Oymaklı neighborhood. As a result of these analyzes, zinc deficiency was observed in 20% of the plants. The amount of iron in the plant is above the critical value and close to the limit value. Therefore, soil and plant analysis should be done after taking into account the climatic conditions and ıf necessary, fertilizer should be selected and applied accordingly.

Keywords: Lentil, ıron, zinc, fertilizer, soil pH

GROWTH AND RECLAMATION EFFECT OF TRITICALE (X TRITICOSECALE) PLANT IN SALINE AND SALINE-SODIC SOILS OF THE HARRAN PLAIN

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Abstract

In this study, the cultivation and reclemation effects of Triticale on salt affected soils which are the one of the potential problems in the Harran Plain, were investigated. For this porpuse, an green house experiment was established by using saline soil taken from Harran series (Bozyazı region) and saline-sodic soil taken from Akçakale series.. Triticale seeds were planted in soils with 4 replications in each type of soil and 3 plantless control pots were used for each soil. Potential reclamation effect and plant growing stages of grown triticale in both type soils were investigated during 3 months period. Obtained results indicated that Triticale decreased the EC values from 4.45 dS m-1 to 1.99 dS m-1 in saline soil and also decreased the EC values from 7.28 dS m-1 to 4.90 dS m-1 in saline-sodic soil. When we look at the amount of salt removed from the soils, Triticale removed 37.75 kg/ha salt from saline-sodic soil and it removed 27.2 kg/ha salt from the saline soil. It was observed that the Triticale was also reduced the SAR value, which is the expression of sodification level, from 21.88 to 18.19. The plant growth results showed that the average plant height in saline soil was 26.43 cm, while the average plant height in saline-sodic soil was 13.35 cm. In addition, dry weight values were 10.05 g/pot in saline soil and 2.60 g/pot in the saline-sodic soil and they were statistically significant in $p < 0.05$. In general, Triticale plant has continued to develop normally in saline and saline-sodic soils, but especially better development were determined in saline soil. On the other hand, it has been observed that the reclamation effect of Triticale plant was better especially in saline-sodic soil of the Harran Plain.

Keywords: Phytoremediato, X Triticosecale, Saline Soil, Saline-Sodic Soils, Harran Plain

INTERRELATIONSHIP BETWEEN AMINOLEVULINIC ACID AND SALINITY STRESS IN SOME MAIZE GENOTYPES

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Abstract

A germination experiment was designed to identify appropriate doses of aminolevulinic acid (ALA) which could lessen the deleterious effects of salt on germination of seeds of nine different maize cultivars and to screen all available maize cultivars for their differential tolerance to salt stress (100 mM NaCl). The seeds of nine maize cultivars were soaked for 24 h in solutions containing six levels of ALA (25, 50, 75, 100, 125 and 150 mg l-1). Salinity stress reduced germination percentage, lengths of plumules plus radicles, fresh weight of germinated seeds and soluble protein content, but increased time for 50% seed germination and total soluble sugars. Salinity stress was less detrimental on tested parameters in DK 5783 and more detrimental in Apex 836. Based on the results obtained from the germination experiment, maize cultivar DK 5783 was found to be the most salt tolerant and Apex 836 as the most sensitive cultivar. ALA increased fresh weight of germinated seeds in most cases, but it significantly reduced soluble sugar in hypocotyls in some cases. Of six ALA levels used, there seemed to be no consistent dose being more effective, but in a few cases, ALA at125 and 150 mg l-1 doses seems to be a bit more effective in a few cases for some cultivars. It can be concluded that tolerances of maize cultivars to salinity stress differed and effectiveness of ALA as seed treatment is dependent on doses and cultivars and ALA was not effective in most cases. In the future, lowest doses of ALA may be tested to study its effect on seed germination of a broad range of species and cultivars grown at salinity regime.

Keywords: Aminolevulinic acid; Maize; Salinity stress; Soluble sugar; Total protein

INVESTIGATION OF BLACK CARBON METHOD IN CALCAREOUS SOILS AND DETERMINING THE BLACK CARBON STOCKS OF THESE SOILS

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Abstract

Black carbon (BC) is the main form of inert and recalcitrant components of the soil organic pool and is therefore an important carbon pool in the soil. It is a particulate carbon material resulting from incomplete combustion (incomplete combustion) of fossil fuels and biomass. This carbon variety is involved in many biochemical and environmental processes in terrestrial, atmospheric and marine ecosystems. In this study, soil samples were taken from 17 profiles and 130 genetic horizons in Harran Plain. In soil samples taken were determined BC concentrations of soils, BC stocks, % BC values, BC/OC ratios. As a result of the study, C concentrations of soils varied between 1.00 - 2.53 kg BC m-2. Carbon stocks vary between 10.30-429.93 Gg (1 Gg=109 g) and the highest stock is determined in Harran series and the least in Ugurlu series. % BC values of the profiles are between 0.067 - 0.086 in surface horizons and upper horizon values are generally found close to each other. BC / OC ratios of the study area soils ranged from 0.087 to 0.104 in surface horizons and 0.156 to 0.344 in bottom horizons. There are many reasons why the calculated values may be different from one. The parameters such as horizon thickness, profile depth and thickness, volume weight of the horizon, C contents of the soils and stony conditions caused the BC concentrations and stocks of the soils to rise high or low. As a result, BC plays an important role in C storage in the global C cycle. Determination of BC in soil is very laborious, exhausting, time consuming, expensive and very sensitive. Despite all these disadvantages, it is useful to study it because it will be used to determine some parameters in the future.

Keywords: Black carbon, calcareous soils, Harran plain, black carbon method

INVESTIGATION OF MORPHOLOGICAL, PHYSICAL AND CHEMICAL PROPERTIES AND CLASSIFICATION OF SOILS FORMED ON COMMON PARENT MATERIALS IN ŞANLIURFA FOR FORENSIC APPLICATIONS

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Abstract

Soils have become important sources that have been used recently in forensic applications. On the other hand, soils have highly variable and dynamic characteristics, which causes significant difficulties in their use as source in forensic application. In this study, morphological, physical and chemical properties of soils formed on different parent materials in Şanlıurfa province were examined and classified, and their usability for forensic purposes was evaluated. For this purpose, three soil profiles defined on four common parent materials were sampled as horizon bases, analyzed and classified as soil Taxonomy. According to the results of the field and laboratory observations, significant changes in soil color, clay illuvation, calsificationn and gypsum deposition, different texture classes and abrupt textural cahanges, irregular organic matter distributions were observed. Soil profiles were classified into two ordos as Inceptisol and Vertisol. The fact that soils formed on different parent materials with significant variations were placed into few number of soil classification categories indicate that soil taxonomy does not have the required discrimination capability required by forensic sciences. Therefore, for foerensic uses of soils; different analysis and evaluataion of methods and approaches are needed.

Keywords: Keywords: Forensic use of soils, Soil Properties, Soil classification, Şanlıurfa

INVESTIGATION OF THE EFFECT OF HYDROGEN SULFIDE ON THE SPAD VALUES, FRESH WEIGHT AND PROLINE ACCUMULATION OF PEPPER PLANTS UNDER BORON TOXICITY.

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Abstract

This study was conducted to investigate the effect of hydrogen sulfide (H2S) on SPAD values, fresh weight and proline accumulation of Capia red pepper plant exposed to boron (B) toxicity. After germination, the pepper plants were taken into potted environment filled with perlite and they continued their development by feeding with nutrient solution for a while. B amount: boric acid was used as control (0,05 mM) and high boron toxicity (2 mM). For H2S application (0,2 mM) NaHS was sprayed twice a week. The plants were harvested at the end of the 7th week and the analyses were carried out in order to achieve the objectives of the experiment. Boron toxicity decreased plant fresh weight and SPAD values significantly. Boron toxicity increased proline accumulation in the pepper plants. However, H2S application significantly enhanced proline content in plant. The application of H2S, increased fresh weight and SPAD value of the pepper plant. The results showed that H2S reversed the deleterious effect of B toxicity on plant fresh weight and SPAD values.

Keywords: Boron toxicity, Hydrogen Sulfide, Pepper

MAPPING OF LAND USE CHANGE BY ANALYZING MULTI TEMPORAL SATELLITE IMAGES, GIS AND FARMER REGISTRATION SYSTEM

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Abstract

The Ministry of Agriculture and Forestry is implementing a National Record of Farmers (NRF) to support farmers and plan production. Farmers apply to the agricultural organizations to which they are affiliated and declare the type and spatial quantity of the crops that they planted on their land. These declarations are supported on the parcels of the relevant farmers. In some cases, land are performed. However, some lands cannot be controlled. This may lead to incorrect product areal and support calculations. In this study, the product pattern of the relevant years was compared with digital satellite images by using NRF data from the village of Kaynaklı selected in the field of Harran Plain Cullap Irrigation Association. The boundaries of the village of Kaynakli in the Cullap Irrigation Association were digitized and overlaid with the image at the base of the ArcGIS basemap. In addition, the parcel system belonging to the village is integrated to this data. Landsat satellite image of 2014, 2015, 2016 were used to determine the product pattern in the welded village area. Satellite images of April and August were used to identify the different products during the year. After the digital satellite images were enriched on the computer, they were integrated with the ground controls in 2014, 2015 and 2016, and the images were classified as supervised and a land use map was created. Information about the National Record of Farmers obtained through the declarations of the farmers of the same years was provided in Şanlıurfa Provincial Directorate of Agriculture and Forestry. As a requirement of the study method, the NRF data obtained in a vector was evaluated by integrating the land use map of the same year in ArcGIS software. As a result of the image and NRF analysis, the difference between farmer declarations and real land data was determined and mapped.

Keywords: GIS, UA, NRS, land use map

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MAPPING OF SPATIAL DISTRIBUTION OF SOIL QUALITIES USING GEOSTATISTICAL METHODS IN PRECISION AGRICULTURE; THE HARRAN PLAIN, CULLAP IRRIGATION ASSOCIATION AREA CASE

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Abstract

Improving soil quality requires the use of precision agriculture (PA) technologies. PA aims to increase yield reducing the use of chemicals as agricultural inputs and so environmental pollution. In this study, more than 150 soil samples were collected from the Harran plain Cullap irrigation association area (around 12500 da) and samples were analzyed for various soil physical, chemical and biological quality parameters (Soil Agregate Stability, Soil Organic Matter, Available P, K, CaCO3, Cation Exchange Capacity (CEC), pH). Soil quality indexes were obtained using linear and non-linear scoring functions. Soil quality parameters and indexes were estimated at unsampled locations and the maps showing the spatial distribution of the qualities of soils were produced using both Inverse Distance Weigthing (IDW) ordinary kriging method (OK) and estimation accuracies of both methods were compared using cross validation approach. Overall, average SQIs ranged from 37,54 and 48,48 %. In general, spatial dependence of soil quality parameters and indexes obtained by nugget to sill ratio (Co/C) were moderate. OK was more accurate compare to the IDW method providing less Root Mean Square Error of Prediction (RMSEP). RMSEP values for soil quality indexes obtained using linear and nonlinear scoring functions ranged from 3,52 to 6,68 for IDW and ranged from 3,48 to 6,57 for OK method, respectively. Kriging maps showed that Soil Qualities were low to very low in 85 % of the total study area equaling to 10747 da. Maps was also transfered into google earth environment for evaluation of soil qualities at parcel level.

Keywords: Harran plain, precision agriculture, soil quality index, geostatistical methods

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MINERAL NUTRITION STATUS OF ORANGE TREES IN CITRUS GROWING AREAS OF EASTERN MEDITERRANEAN

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Abstract

Monitoring the plant nutrient dynamics throughout a season in agricultural production is very important for yield, quality, and environmental pollution. The aims of this study were to determine the mobility-variation of macro and micronutrients during the 12-month period in the leaves of Washington Navel orange trees grown in 10 different locations in Adana, Mersin and Hatay provinces covering the Eastern Mediterranean Region. Mean N, P, K, Ca, Mg, Zn, Fe, Cu and Mn concentrations of the leaf samples were ranged between 1.41-2.46%, 0.09-0.13%, 0.84-1.76%, 6.74-7.95%, 0.35-0.59, 12.3-%, 15.5 mg kg-1, 48.2-85.6 mg kg-1, 7.04-10.11 mg kg-1 and 17.3-21.8 mg kg-1, respectively. The highest and lowest mean concentrations determined for each element differed according to sampling time. The highest N concentration (2.46%) was determined in September, while it was in November for Mn (21.75 mg kg-1). Sampling time is very important to determine the nutritional status of plants. The periods with the lowest plant nutrient changes in the leaves are the best sampling times. The lowest changes of leaf nutrient concentrations, except N, in Çukurova conditions were observed in October, November and December. The stable period for N was determined to be May, June and July. The difference can be attributed to differences in the frequency and means of the fertilizer application and N dynamics in soils. Therefore, Further studies under controlled conditions are required to determine the optimum sampling time in Çukurova conditions.

Keywords: Sampling time, Seasonal change, Nutrient, Citrus, Çukurova

MODELING AND MAPPING OF DISTANCE-DEPANDED VARIABILITY OF SOIL MICRO ELEMENTS IN ORMANARDI RESEARCH AREA OF BINGOL UNIVERSITY

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Abstract

Lack of microelements in the soil negatively affects the yields in areas where intensive plant production is performed. Studies on spatial variability of essential micronutrients in Turkey's agriculturally intensive areas were limited. The aim of this study is to determine the amount of microelement contents of soils of the research and application farm of Bingöl University under different land uses, and to model and map the distance. depended spatial variability The total area of the study field is 67 ha. The study area was divided into 100 X 100 m grids and soil samples were taken from 0-30 cm depth at the corner of from grids at 64 sites. In addition, 24 of soil samples were taken from 5, 25 and 60 m intermediate intersections in order to determine the change of soil properties at distances less than 100 m. The contents of soil extractable zinc (Zn), copper (Cu), manganese (Mn) and iron (Fe) were analyzed, and semivariograms were prepared for each micro element content, and distribution maps were generated by using kriking methods.

According to obtained results, it was determined that iron (CV = 31.31%) and copper (CV = 27.50%) showed modest variability while Manganese (CV = 48.40) and Zinc (CV = 44.32) showed high variability. Spatial distributions maps for each micronutrients determined were obtained after semivariograms were formed using suitable model parameters.

The distrubitons maps showed that all microelements had a important varaibility depending on the distance, especially as the microelement contents of the soil increased relatively from the south-east to the north-west directions.

Keywords: Geostatistics, Spatial Analysis, Variability, Bingöl

PERIODICITY IN PISTACHIO AND POSSIBLE SOLUTIONS

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Abstract

Turkey is one of the important gene centers of pistachio. Turkey has an important share in pistachio production in the world after the USA and China. Southeastern Anatolia region of Turkey has an important ecology for pistachio cultivation and fulfills a large and important part of the country's pistachio needs. However, the presence of an appropriate ecology do not result in higher pistachio yield. The reasons of low pistachio yield in the country include; low yields in young trees, nutrient poor, calcareous, stony and gravely soils, decrease in annual rainfall, lack of irrigation, insufficient fertilization, insufficiency of pollination, and periodicity in many pistachio varieties. It has been proved in various studies that more produce can be obtained by eliminating these reasons of low productivity. Pistachio is widely grown in the country, have high economic value; therefore, this review is conducted to emphasize the importance of periodicity problem.

Keywords: pistachio, cultural measures, periodicity, fertilization

PHOSPHORUS FOR SUSTAINABLE AGRICULTURE

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Abstract

Phosphorus (P) is a very unique nutrient elements for modern agriculture. High yield cannot be obtained without P application to soil. Too much additions of mineral and organic fertilizer build up soil P contents. P movements from high soil P content can cause an environmental problem as called 'Eutrophication' when P reaches to surface water body. Phosphorus sources are limited. Therefore, it is vital to develop some strategies to increase P use efficiency by applying best management techniques. For that purpose, it is obligatory to increase P use efficiency and decrease P losses from agricultural land to surface water bodies.

Keywords: Environmental pollution, Fertilizer, Phosphorus, P use efficiency, Eutrophication.

POTENTIAL USE OF ORGANO-MINERALSFOR SOIL AMENDMENT

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Abstract

Recent years, the use of Organo-mineralsfertilizer in agriculture has been used intensively. Organo minerals may be use as alternative fertilizer instead of chemical fertilizer.In addition, the application of the organic material with the inorganic fertilizers can be improve the physical, chemical and biological properties of the soil due to the organic material contains. Moreover, many researcher have been informed that target-based organo-mineral fertilizers can be more efficiently to improve crop yield. Likewise, phosphate, potassium or micro element-rich organo-mineral fertilizers are usually present to be more effective than mineral fertilization. Besides, the application of organic-based fertilizer can promote plant growth parameter as well soil quality with cost effective environmental benefits due to organic waste management. This present review, it may conclude that organo minerals fertilizer promote effectively soil andcrop management,alleviate excessive application of chemicals.

Keywords: organo- mineral, soil amendment, fertilizer

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QUALITIES OF SOILS DETERMINED USING LINEAR AND NON-LINEAR SCORING FUNCTIONS; THE HARRAN PLAIN, CULLAP IRRIGATION ASSOCIATION AREA CASE

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Abstract

Soil quality is closely related to the quality of environment and human life. Therefore, having knowledge about qualities of soils, their yield potential and their management is crucial. In this study, more than 150 soil samples were collected at 0-30 cm depth from soils located in the Harran plain Cullap irrigation association area (around 12500 da) and analzyed for selected soil physical, chemical and biological quality parameters (Soil Agregate Stability, Soil Organic Matter, Available P, K, Fe, Cu, Zn, Mn, CaCO3, Cation Exchange Capacity (CEC), pH). linear and non-linear scoring functions have been used for determination of soil quality indexes. Principal Component Analysis (PCA) was used to determine the soil quality parameters impacting soil qualities the most and to form Minimum Data Set (MDS). MDS consisted from the parameters such as soil organic matter, available K, Zn, Mn, CaCO3 and pH. Soil quality indexes obtained using linear scoring functions ranged between 29,1 % and 51,9 % while index values obtained using non linear scoring functions ranged between 31,9 % and 73,9 %. The relationships between soil qualities obtained using two methods were statistically significant (R^2=0,58, $p < 0.05$). Overall the qualities of the study area was low because of inapropriate irrigation and soil management practices and lack of soil organic matter. In order to improve the qualities of soils, awareness about soil quality and factors causing soil quality degredation should be raised among the farmers and they should be encouraged to adopt best management practices (BMPs).

Keywords: Harran plain, soil quality index, PCA, linear and non linear scoring functions

RHIZOSPHERE PROCESSES IN NITRATE-RICH BARLEY SOIL TRIPLED BOTH N2O AND N2 LOSSES DUE TO ENHANCED BACTERIAL AND FUNGAL DENITRIFICATION

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Abstract

Plants can directly affect nitrogen (N) transformation processes at the micro-ecological scale when soil comes into contact with roots. Due to the methodological limitations in measuring direct N2 losses in plant-soil systems, however, the effect of rhizosphere processes on N2O production and reduction to N2 has rarely been quantified. For the first time, we developed a robotic continuous flow plant-soil incubation system (using a helium+oxygen+carbon dioxide atmosphere) combined with N2O 15N site preference approach to examine the effect of plant root activity (barley – Hordeum vulgare L.) on: i) soil-borne N2O and N2 emissions, and ii) the specific contribution of different pathways to N2O fluxes in moist soils (85% water holding capacity) receiving different inorganic N forms. Our results showed that when a nitrate-based N fertiliser was applied, the presence of plants tripled both N2O and N2 losses during the growth period but did not alter the N2O/(N2O+N2) product ratio. The 15N site preference data indicated that bacterial denitrification was the dominant source contributing to the observed N2O fluxes in all treatments, whereas the presence of barley increased the contribution of fungal N2O in the nitrate treated soils. During the post-harvest period, N2O and N2 emissions significantly increased in the ammonium-fertilised treatment, being more pronounced in the soil with a senescing root system. Overall, our study showed a significant interaction between rhizosphere processes and N forms on the magnitude, patterns, and sources of soil-borne N2O and N2 emissions in moist agricultural soils. We conclude that these interacting factors should receive greater consideration when designing of more effective climate-smart fertilization practises.

Keywords: Denitrification; Nitrous oxide; Nitrogen cycling; Rhizosphere; Plant

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THE DETERMINATION OF SOME SOIL AND FRUIT CHARACTERISTICS OF PISTACHIO (PISTACIA VERA L.) GARDENS IN SİİRT

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Abstract

In this study some soil properties and quality parameters of the pistachio which is increasingly produced in Siirt region were studied. For this purpose soil sampling was done from the pistachio fields at depths of 0-20 and 20-40 cm. Besides, some properties of the pistachio fruits which were collected from the same fields, were determine and values were compared with the catalogue values of the fruits. When average values are taken into consideration district lands have very little useful phosphor and potassium at on average level. The determined organic matter amount is higher than intensively cultivated agricultural lands. The results showed that the soils of the study fields were clayey, calcareous and none-saline. These soil properties are suitable for the cultivation of the pistachio in the fields. In addition to, besides the values of fruit weights and 100 fruit weights of the produced pistachio properties, all other measured properties were higher than the catalogue values published from Ministry of Agriculture in 1993. In general it can be concluded that, studied pistachio fields in Siirt region were not much affected from the soil properties. The only limited property of the soil was the low available phosphor content that should be applied to the soil as fertilizer to get higher fruit production in the studied places.

Keywords: Siirt, Anteppistachio, Soil Property, Pistachio Property, Pistachio Fruit

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THE EFFECT OF APPLYING DIFFERENT DOSES OF SEWAGE SLUDGE TO SOIL ON PROTEIN RATE AND THE AMOUNT OF SOME OIL ACIDS

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Abstract

The aim of this study was to determine how affects protein and oil acid ratios obtained by using different doses of sewage sludge as a result of treatment of urban wastewater. The field experiment was carried out gravelly in 2005, 2006, 2007 years with randomized complete block design. The purpose of the gravelly is to determine the effect of the sewage sludge after long years of use. Six difeerent doses (0, 1000, 2000, 3000, 4000 ve 5000 kg da-1) of Umut-2002 soybean cultivar were used in the experiment. In conclusion, at the end of the third year, it was observed that the use of sewage sludge for 3 consecutive years had no effect on protein rate, oleic acid, stearic acid, palmitic acid, increased the linolenic acid and decreased the linoleic asid content in soybean.

Keywords: sewage sludge, soybean, protein, oil acid

THE EFFECT OF BIOCHAR APPLICATIONS OBTAINED FROM DIFFERENT ORGANIC SUBSTANCES APPLIED ON CALCAREOUS SOIL ON SOME CARBON FORMS

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Abstract

Biochar (BC) is called the material obtained after pyrolysis under the conditions of oxygen, less oxygen or completely oxygen free by the carbonization method of organic materials of plant and animal origin. Biochar of the main objectives is to enrich the carbon (C) content and to increase it, while paying attention to many parameters. The use of biochar in agricultural activities causes the soil organic C to decompose more slowly, thus increasing the soil organic C content. It also helps prevent global warming by reducing emissions of greenhouse gases that cause global warming such as CO2 and N2O. In this study, in laboratory conditions, the effect of the soil on some carbon forms (microbial biomass C, water soluble C and CO2-C emission) is examined by applying different ratios (0.5%, 1% and 1.5%) to the soil from different organic materials (Orange peel (OPBC), Almond peel (APBC), Tobacco waste (TWBC), Pomegranate peel (PPBC), Cotton waste (CWBC), Wheat waste (WWBC)). At the end of the study, when the effect of the biochar species (type) on the CO2-C emission of the soil was examined according to the control (Co) group (5.12 mg CO2-C kg week-1), the lowest flux APBC (0.54 mg CO2-C kg-1 week-1), the highest flux was observed in OPBC (5.64 mg CO2-C kg-1 week-1). In the 1.0% and 1.5% BC applications, the highest flux was determined in both OPBC and the lowest flux was PPBC in both doses. It is estimated that organic C is more decomposed and degraded because OPBC is softer than PPBC and contains more easily decomposable aromatic compounds. When the effect of BC applications on WSC sources of soils is examined, the highest value is found in WWBC (134.47 mg C kg-1) and the lowest value is found in APBC (24.17 mg C kg-1). At the other two doses, at least the WSC amount was measured at APBC (18.88 mg WSC kg-1), while the maximum WSC amount was at 1.0% TWBC (98.17 mg WSC kg-1), and 1.5% at PPBC (133.88 mg kg-1). Carbon content of APBC is highly resistant to decomposition-disintegration caused to increase the WSC value. When the CO2-C fluxes of the samples were examined, the lowest flux was observed at APBC (4.64 mg CO2-C kg soil week-1). When the effect of the applications BC on the MBC contents of soils was examined according to Co group (117.32 mg MBC kg-1), the highest CWBC (288.64 mg MBC kg-1) was measured in 0.5% application and at least APBC (138.88 mg MBC kg-1). In the other two BC applications, the lowest MBC content was found in APBC, while in the maximum 1% application it was seen in WWBC (430.75 mg MBC kg-1) and in 1.5% CWBC (277.15 mg MBC kg-1). When the results were evaluated, it was found that the carbon storage capacity of APBC, which is resistant to decomposition and disintegration, was higher than the other types of BC. In addition, it is observed that this type of BC can be very important in terms of reducing greenhouse gases and global warming due to the decrease in CO2 gas flexes in the case of application to soil.

Keywords: Biochar, soluble C, microbial biomas C, C storage, CO2-C emission

THE EFFECT OF DIFFERENT ORGANIC SUBSTANCE BIOCHAR APPLICATIONS ON CARBON EMISSION UNDER CONTROL CONDITIONS

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Abstract

Biochar (BC) is the material obtained from the process of pyrolysis of oxygen and less oxygen or completely oxygen-free conditions by the carbonization method of organic materials of plant and animal origin. Due to the rapid increase in the world population, producers and scientists have sought to obtain maximum efficiency from the unit area in order to meet the increasing need for food. Therefore, agricultural areas have been exploited more and at the same time the effect of agricultural activities on global warming has increased rapidly. In order to reduce the greenhouse gases released by agricultural activities and improve the bio-physico-chemical properties of soils, it is necessary to bury organic residues in the soil.. For this purpose, obtained in the laboratory the effect of different BC types (orange peel, OPBC; almond shell, ASBC; tobacco waste, TWBC; pomegranate peel, PPBC; cotton waste, CWBC; wheat waste, WWBC) on CO2-C output from soil was investigated. According to this, 0.5% dose of BC types applied to soil was compared to control (Co) group (5.12 mg CO2-C kg soil week-1) were measured 5.66, 4.64, 4.83, 4.79, 4.98 and 5.20 mg CO2-C kg of soil as week-1, respectively. When the cumulative CO2-C values of 1.0% dose of BC types applied to soil were compared with Co (189.63 mg CO2-C kg soil) group; 209.74, 171.92, 178.88, 177.33, 184.53 and 192.48 mg of CO2-C kg of soil. The comparison of the CO2-C flux values of the 1.5% dose of BC types with the Co group, were determined 0.043, 0.033, 0.036, 0.028, 0.032 and 0.037 mg of CO2-C kg of soil h-1, respectively. According to the data obtained from the study, OPBC was higher than Co group in all three doses. This is thought to be because the OPBC is a soft, easily decomposed - disintegrating aromatic species. Except for this type of BC, it is estimated that if other BC are applied to the soil, they will have a reducing effect on global warming. In addition, the importance of these BC types in terms has emerged in carbon sequestration and storage to soil. In this context, the obtained BC should not be allowed to be used for energy purposes, but rather to reduce atmospheric gases (CO2, N2O) by using it in agriculture. Because plant residues grown in the soil should remain in the soil and the soil should be improved. This should be the most natural and important right of the soils.

Keywords: biochar, soil, CO2 emission, carbon sequestration

THE EFFECT OF LOW VOLTAGE ELECTRIC CURRENT APPLICATIONS ON SOIL CARBON DYNAMICS

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Abstract

Soil organic carbon (TOC), microbial biomass carbon (MBC), water soluble carbon (WSC) and microbial respiration (MS) are some of the most important soil quality (health) parameters. Soil quality parameters are one of the most rapidly changing properties of soil. In this study, the effects of low voltage electric current (VEC: 0mV, 3.5mV and 7.5mV) applications were investigated in these parameters. In the study, the maximum amount of CO2-C was showed in maximum flux VEC 7.5, (12.89 mg CO2-C kg-1 soil week-1) and at least fluxes VEC 0 (1.31 mg CO2-C kg-1 soil week-1) to the soils. The results of the repetitive analysis of variance (ANOVA) performed in relation to the effect of electrical current applied at different levels of carbon emissions, and the interaction between application of current and time. The result of repeated ANOVA analysis showed that amendments, time, amendments interaction with time were statistically significant ($P<0.001$). The effect of VEC 7.5 on the amount of WSC (300.44 mg kg-1) was found to be more effective than VEC 0 application (348.14 mg kg-1). The effect of electric current on MBC was 393 mg kg-1 in VEC 7.5 and 385 mg kg-1 in VEC 0. It has been thought that low voltage electric current can cause degradation of soils, increasing the rate of decomposition in the soil.

Keywords: low voltage, electric current, health parameters, earth

THE EFFECT OF REDUCED CHEMICAL FERTILIZER AND LEONARDITE APPLICATION ON SOME PROPERTIES OF SOIL AND YIELD OF COTTON PLANT

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Abstract

Leonardite is one of the organic materials used for improving soil properties and thus increasing the yield per unit area. Our study was aimed to apply different amounts of leonardite to the cotton plant entirely in farmer conditions. The effect of applied leonardite on some characteristics such as soil and plant parameters has been determined. The study was conducted in the village of Bellitaş of Harran district. The field study was constructed according to the randomized block design with 3 replications. In the study, 3 different doses of leonardite (0 kg/da, 150 kg/da, 300 kg/da) were applied. Half and quarter amounts of actual chemical fertilizer also applied with and without leonardite. After harvesting, soil organic matter, soil pH, Electrical Conductivity (EC), Cation Exchange Capacity (CEC) of the soil and the number of cotton plants in the parcel, the number of cotton cones and cotton yield were determined. Soil parameters were determined before plantation and after harvesting. As a result of this study, it has been determined that leonardite applied in different amounts were effective on organic matter increase in soil. Higher amount of leonardite application also increased cotton yield. These effects were statistically significant ($p<0.05$) however, other parameters studied were statistically insignificant ($p> 0.05$) on application effects.

Keywords: Cotton yield, soil, leonardite

THE EFFECTS OF DIFFERENT ORGANIC MATERIALS SUBSTANCE OF BIOCHAR APPLICATIONS ON B - D GLUCOSIDASE, B - D GALACTOSIDASE AND B - D GLYCOSAMINIDASE ACTIVITY

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Abstract

β-glucosidase and β-galactosidase enzymes are used by the soil microorganisms as an energy source and plays an important role in the biochemical carbon cycle. The β-glucosaminidase enzyme is one of the enzymes that play an important role in C and N cycles and participates in the processes in which chitin is transformed. It also plays a role in the breakdown of amino sugars, one of the major sources of mineralizable N in soils. In this study, different biochar (BC) (cotton residues (CRBC), tobacco residues (TRBC), wheat residues (WRBC), pomegranate peel (PPBC), almond peel (APBC), orange peel (OPBC)) applications in the soil β-Glucosidase, β-galactosidase and β-glucosaminidase enzyme activities were investigated. Accordingly, β-glucosidase enzyme activity ranged between 0.029 - 0.039 µmol p-nitrophenol g-1 h-1 in 0.5% BC application and the highest value was found in TRBC. The highest activity of β-galactosidase enzyme was determined with 0.019 - 0.033 µmol p-nitrophenol g-1 h-1 in CRBC. The activity of β-glycosaminidase enzyme was between 0.22 - 0.27 µmol p-nitrophenol g-1 h-1 and the highest activity was observed in TRBC.

β-glucosidase enzyme activity ranged from 0.031 to 0.039 µmol p-nitrophenol g-1 h-1, respectively, with the highest value in TRBC. The β-galactosidase enzyme activity was highest in the TRBC with 0.019 - 0.029 µmol p-nitrophenol g-1 h-1. The activity of β-glycosaminidase enzyme was between 0.18 - 0.26 µmol p-nitrophenol g-1 h-1 and the highest activity was observed in TRBC.

In 1.5% BC application, β-glucosidase enzyme activity ranged from 0.031 to 0.042 µmol p-nitrophenol g-1 h-1, respectively, and the highest value was found in PPBC. β-galactosidase enzyme activity was highest in CRBC with 0.019 - 0.027 µmol p-nitrophenol g-1 h-1. The activity of β-glycosaminidase enzyme was between 0.21 - 0.29 µmol p-nitrophenol g-1 h-1 and the highest activity was observed in CRBC.

Keywords: β-glucosaminidase, β-galactosidase, β-glucosidase, biochar, soil enzyme

THE POTENTIAL USE OF BIOMASS ASH OF LOW PH SOILS

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Abstract

It is well known that the use of renewable energy sources has become global concerns in order to meet the increasing energy consumptionin recent years. One of these raw materials are various biomass materials. While biomass is obtained, after some thermal processes, solid waste is produced as biomass ash. The implementation of biomass as a sustainable method because it utilize agricultural wastes and forest wastes as a source material to enhance the soil health.Many researchers use these solid wastes as a result of biomass combustion to meet the nutrients needed by forests, pastures and agricultural soils. Moreover, therefore, biomass ash has been used as soil amendment in different land management in recent years due to its high phosphorus (P) and other nutrients it contains. Since biomass ash contains high pH, it has high cation exchange capacity and is applied to soils with low pH especially in forest areas. In this way, biomass ash can be used to increase the pH of soils.It can also be applied as an alternative to chemical fertilizers due to the recovery of waste. That is why, it was conclude that the properties of soils can be improved by the biomass ashes.

Keywords: Biomass ash, ash treatment, acidic soil

THE USING OF PHOSPHORUS FERTILIZER IN COTTON

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Abstract

Phosphorus is the second most restrictive food in cotton (Gossypium hirsutum L.) production after nitrogen. It is essential for cell division and meristematic tissue development and is a component of the cell nucleus. Especially in the early stages of cotton growth, P deficiency limits growth. In addition, P is important for promoting early rooting in cotton and for storing and transferring the necessary nutrients. Even in nutrient-rich soils, cotton cannot develop as many roots as cereals, and P applications are required for nutrient absorption in these areas. In general, only 20-30% of the applied P fertilizer is used by cotton in the same year, while the rest is tied to the soil and can be used later. Thus, phosphorus pool is formed in the soil. These formed phosphorus pools increase the amount of phosphorus in the soil days later. First, slow release occurs in compounds where P is highly inert and such as calcium phosphate. The slowly released P can be used by the plants by mixing with the soil solution so that the slow release pool is exhausted over time. Therefore, the fertilization strategy should replace the P consumed by the cotton every year. However, farmers use unconsciously continuous phosphorus fertilizer despite sufficient phosphorus in the soil. This leads to increased costs and extra labor costs. In many studies, although different doses of phosphorus fertilizer was given, it was observed that the yield parameters of the plant could not be changed. In other words, it is understood that the amount of phosphorus in the soil is high and the plants do not need extra phosphorus fertilizer. The aim of this study is to emphasize the importance of P application to the extent required by tillage due to the slow motion of P. In addition, the effectiveness of P applied by fertilization, balance management method to evaluate and reduce unnecessary fertilization.

Keywords: Cotton, Phosphorus, Fertilization

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UREASE ENZYMES ACTIVITY OF SOILS GROWN BY SOME FRUIT TREES IN HARRAN PLAIN

ERDAL SAKİN[1], EMRAH RAMAZANOĞLU[1], ELİF DİDEM SAKİN[1], BEKİR EROL AK[1], ALİ SEYREK[1]
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Abstract

Urease is one of the most important extracellular enzymes and is involved in mineralization processes in agricultural soils. Therefore, this enzyme has an important role in the soil. Urease is an important enzyme that catalyzes hydrolysis of urea to ammonia ($NH_2CONH_2 + H_2O \rightarrow 2NH_3 + CO_2$). As a result of this catalysis, the oxidation of ammonia is very important in agricultural and environmental aspects. It is also important to determine this enzyme in calcareous soils of the Harran Plain. Therefore, this study was carried out in the field of Horticulture Fruit Research Unit in Osmanbey Campus at Harran University. Soil samples were taken in 10 different orchards in the study area at a depth of 0-15 cm then were sieved in the field and put in plastic boxes with lid to keep moisture and stored in the refrigerator at +4 °C. As a result of the analysis, the lowest urease enzyme activity was determined in 4.63 µg N g-1 dry soil h-1 and the highest activity was 5.82 µg N g-1 dry soil h-1. Accordingly, urease enzyme activity has been determined; 4.63 – 4.96 in almond, 5.25 – 5.82 in vineyards, 5.50 - 5.53 µg N g-1 in no-tillage areas dry soil h-1. The urease enzyme activity of the soils taken from the plant root zone was found to be higher than the samples taken from the root zone. Factors such as excess organic wastes in the plant root region, fertilization and irrigation, high urease enzyme in the root region were estimated to be effective. In addition, high microbial activity in this region is one of the most important factors. The high level of urease enzyme in the soil is thought to cause an increase in the bacterial population and dominant of this group of microorganisms. This is the threshold (initial) stage of nitrification. At this stage, the resulting release of ammonia and the rise of pH can lead some problems in plant breeding. As a result, the release of CO_2 with ammonia alleviates the existing problems slightly and has a negative impact on global climate change due to CO_2 release. It is the greatest risk release of excess CO_2 in the soils and accumulation in the atmosphere. In another important aspect, it is predicted that the rapid decomposition and degradation of organic residues will cause the carbon stocks of soils to decrease and the atmospheric carbon pools to increase. As a result, urease enzyme is effective in hydrolyzing first degree urea to ammonia as well as other mixed problems in soil.

Keywords: urease enzyme activity, calcareous soils, carbon stocks, climate change

USING OF BACTERIA AND MYCORRHIZA IN GROWN PLANTS UNDER STRESS CONDITIONS

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Plants face many stress factors affecting their germination, growth and development throughout their life cycles. These stress factors may be of different origin, such as biotic and abiotic, create biochemical and physiological damages in plants and adversely affect the quantity and quality of the product. Plants have different defense mechanisms to reduce or prevent negative effects of stress factors. These defense mechanisms can be divided into three groups: homeostasis of macromolecules and ions, synthesis of protective molecules, formation of reactive oxygen species (ROS) and detoxification. The homeostasis of macromolecules and ions is one of the basic response mechanisms of plants to dehydration. Also, homeostasis; this standard covers the activation and inactivation of aquaporins and ion transport systems that play a role in the control of water conduction and ion balance. Another response to stress in plants is based on the synthesis of protective molecules such as low molecular weight, soluble substances or osmolites, heat shock (Heatshock) and LEA proteins (late embryogenesis dependent). These molecules act as osmotic regulators and osmoprotectants in the cell. The formation of enzymatic and non-enzymatic antioxidants responsible for ROS synthesis and detoxification under stress conditions is the last molecular response to stress. In addition to these defense mechanisms, the plant also plays an important role in the fight against stress factors such as mycorrhiza and bacterial species, which increase the plant development and resistance, providing a symbiotic life with the plant. In biotechnology, which has become one of the most popular fields of study today, adaptation and resistance of plants to stress conditions should become the primary target.

Keywords: Mycorrhiza, Bacteria, Stress

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A GENERAL ASSESSMENT ON AGRICULTURAL EDUCATION NEEDS OF SYRIAN REFUGEES IN ŞANLIURFA

MİZGİN HALİL[1], MUSTAFA HAKKI AYDOĞDU[1]
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Abstract

Migration and its problems, which are accepted to start with the history of humanity, have come to the forefront with globalization and a permanent solution has not been produced yet. Due to the events that started in Syria in 2011, migrations from this country started and most of Syrians emigrated to Turkey. As of the end of April 2019, the number of Syrians under temporary protection was 3.6 million. In Turkey, after Istanbul is the most Syrians living in Şanlıurfa which is about 445 thousand people. Syrians tend to engage in unskilled jobs and work more intensively in sectors such as agriculture, which are seasonal jobs. The aim of this study is to determine the agricultural educational needs of Syrians working in the agricultural sector. In this context, face-to-face interviews were conducted with Syrians. According to the obtained results: 39 is the average age of the people interviewed who are located in Turkey about 3.55 years. 24.44% of them stated that they worked in agriculture because there was no other job and the language problem in communication was the least. On average, approximately 1 person from each family works in agriculture. While 28.9% of them work only in crop production, 64.4% are involved in all kinds of agricultural activities they can find. 44% of them stated that they have minimum information about the job they work in, while 56% stated that they needed additional information. 38% of the interviewees stated that they would prefer to get this information from familiar and reliable people. The data obtained from this study can be used to increase the working efficiency of Syrian refugees and to integrate them with local people.

Keywords: Syrian refugees; Agriculture; Need for Knowledge; Agricultural Information

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AN ASSESSMENT OF FARMERS' VIEWS ON IRRIGATION ASSOCIATIONS IN HARRAN PLAIN

HATİCE PARLAKÇI DOĞAN1, MUSTAFA HAKKI AYDOĞDU[1]
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Abstract

Although irrigation management in Turkey legally authorized by the public, irrigation management began to be transferred to water users since 1993. This ratio was around 96% in 2016. User organizations determine water costs based on expected operating, maintenance and investment costs for the year. Dominating pricing practices in Turkey is the price per hectare varies according to the product. Turkey's EU candidacy, has added a new dimension to the problems in the irrigation sector and has led the EU to be a party to the Water Framework Directive which was approved in 2000. In this study; The survey conducted in the Harran Plain aimed to determine farmers' views on the activities of irrigation unions. Accordingly, the general perception created by irrigation unions in farmers is that their activities are not good. Irrigation unions are in a worse position in terms of dealing with the problems of the members, improving irrigation, training, extension and supply of equipment-inputs. 57.97% of the farmers stated that irrigation associations were inadequate for irrigation development, training and extension, 57.18% for dealing with the problems of the members and 53.99% for the supply of equipment and input. Of the farmers, 51.86% reported negative views on maintenance and repair of irrigation systems, 49.73% on irrigation fees and collections, 46.01% on management activities of irrigation unions and 45.21% on irrigation plans, water supply and irrigation time. Irrigation associations should be more concerned with the problems identified within the scope of the survey.

Keywords: Irrigations Associations; Farmers; Water Management; Harran Plain

AN ASSESSMENT ON THE IMPORTANCE OF COMMON AGRICULTURAL ACTIVITIES IN THE INTEGRATION OF SYRIAN REFUGEES WITH LOCAL PEOPLE IN ŞANLIURFA

MİZGİN HALİL[1], MUSTAFA HAKKI AYDOĞDU[1]
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Abstract

Human mobility, expressed by the concept of migration, has been one of the most important problems of social life and modern world since the beginning of human history. Countries face constant crises. Crises are experienced among countries as well as between countries. The crises that occur within the countries grow and cause regional or international crises. In this context, when crises occur, they need to be managed well. Millions of Syrians because of the civil war in Syria migrated to Turkey. Syrians tend to engage in unskilled jobs and work more intensively in the construction, textile and service sectors, particularly in agriculture and animal husbandry, which are seasonal jobs. The share of Syrians in Şanlıurfa is approximately 22% of the total population of the province. The majority of the projects carried out in Şanlıurfa on Syrian refugees are related to agricultural activities. Recently, common projects have been carried out within the scope of the integration of local people and Syrians. Agriculture is one of the easiest sectors to integrate. It was observed that the common agricultural activities carried out had a positive effect on the integration. Cooperation in agriculture between Syrian refugees and local people gains importance in this respect. The two-way benefit of common activities is emerging. While local people provide cheaper labor, refugees earn money for their livelihoods. This situation increases the trust and leads to a decrease in stress between local people and Syrian refugees. It is important to develop these kind of cooperation.

Keywords: Syrian refugees; Local people; Common agricultural activities; Cooperation for integration

AN EVALUATION ON THE IMPORTANCE OF ORNAMENTAL PLANTS FOR ŞANLIURFA

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Abstract

Ornamental plants are defined as plants that are produced, propagated and grown for aesthetic, functional and economic purposes by using different methods. Cut flowers are in the class of ornamental plants. The ornamental plant sector is regarded as an effective sector which has an important place in the production of herbs and provides a great contribution to the economy. Depending on the ecological characteristics, it is an important source of income and sector both in terms of employment and trade in areas suitable for cultivation of ornamental plants in terms of climate and soil characteristics. In addition to outdoor cultivation, it is possible to produce in greenhouses without seasonal effects. Şanlıurfa has the potential to grow its own ornamental plants due to its seasonal features. It is possible to produce in greenhouses in closed areas and in geothermal areas in Karaali region, as well as in the region-specific varieties which are resistant to hot climatic conditions. Currently, 50 varieties of ornamental plants are produced in Karaali greenhouses where domestic and export sales are made to the European Union countries.On the other hand, there are some ornamental plants growing only in Şanlıurfa.Centaureaobtusifolia,Crocus leichtlinii, Scillamesopotamica, Hypericumcapitatum, grow black rose in Halfeti andCousiniabirecikensis in Birecik are some of them.Ornamental plants have the highest added value both in terms of employment and production value.Şanlıurfa is an important province in terms of nature tourism with its natural structure besides its historical and touristic values.In this sense, ornamental plants emerge as a value that can be used to increase individual and social welfare in Şanlıurfa.

Keywords: Ornamental plants; Local variety; Potential of Şanlıurfa

DROUGHT INSURANCE APPLICATIONS IN WHEAT FARMING IN SANLIURFA PROVINCE

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Abstract

As agriculture is a production method depending on natural risks, climatic events affect production significantly. Drought, which is among the natural risks, is an important factor that threatens plant production all over the world. Today; Drought, which is one of the biggest problems that we face in the global scale, affects every stage of our lives including physical and natural environment, urban life, development and economy, technology, agriculture and food, clean water and health. The aim of this study was to investigate the drought insurance status and willingness of insurance of dry agricultural producers engaged in wheat cultivation in Şanlıurfa province and central districts. Proportional sampling method was used to determine the sample size of the study. It was obtained from primary data by face-to-face interviews with 32 producers who had drought insurance for TARSİM in Şanlıurfa and central districts in 2017 and 168 producers randomly selected by proportional sampling method. 96.5% of the examined wheat producers were men and 3.5% were women. The probability of having drought insurance was found to be 19.5% higher for the producers who graduated from college or university. 87.50% of the wheat producers who insured stated that they are members of cooperatives, while 73.20% of the wheat producers who did not insure that they were members of producer organizations. 71% of the producers who had drought yield insurance in the wheat producers examined the insurances in order to benefit from the discounted loan. Most of the non-insured producers stated that they did not believe that the loss would be paid in full and they did not take out insurance because they found the premium prices high. According to the results of the research, the insurance applications should be supported more by the state, the policy content of the drought insurance should be explained to the producers more extensively by the banks and insurance agencies, more promotion and training activities should be done and the necessary information about the system should be visited to the producer.

Keywords: Drought, insurance, wheat agriculture, Sanliurfa

ATTITUDES AND THOUGHT ON THE EFFECTS OF GEOGRAPHIC MARKED PRODUCTS ON REGIONAL DEVELOPMENT

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Abstract

With globalization, consumers are able to access goods and services faster and more easily. In addition, due to developing technology and changing lifestyles, consumers have turned to local markets. Continuous counterfeiting in local markets causes both consumers and manufacturers to remain in a difficult position. In order to prevent this situation, the necessary implementations have been initiated with the enactment of the Decree Law No. 555 on the Protection of Geographical Signs issued on 27.06.1995 following the World Trade Organization (WTO) proposals. A geographic mark is one of the intellectual and industrial property rights of a product, which is identified with a region, area, region or country of origin in terms of its distinctive character, reputation or other characteristic features. Geographical signs are emerging as a developing trend in many countries, especially in European countries. In addition, the cultural and local heritage of both the protection and sustainability of the agenda in terms of ensuring. Geographical signs give local products distinctive qualities, thus preventing counterfeiting of products. In addition, the geographical sign has an important place in the development of the region. It also contributes positively to the increase in the revenues of the producers, to increase the competitiveness in the big markets and to the emergence of higher quality products. The presence of cooperatives and unions in the region is seen as a tool for the development, dissemination and development of the product that has received geographical indication in theregion.

Keywords: Geographical Sign, Regional Development, Importance of Cooperatives and Unions

COMPARISON OF EUROPEAN UNION AND TURKEY VARIETY REGISTRATION REGULATIONS ON AGRICULTURAL CROPS

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The European Union is a strong stakeholder and reference point in the world seed sector. Turkey is in negotiations for European Union membership. The harmonization of the Turkish variety registration system with the EU will be an important landmark for the Turkish seed sector. In this study, Council Directive 2002/53/EC of 13 June 2002 on the common catalogue of varieties of agricultural plant species and Implantation Regulation of Plant Varieties Registration and some related legislation of Turkey were compared. The comparison results are collected in a compliance table and the differences and compatibility in this table are explained. The percentage of compliance was determined on these topics. The compliance rate of Turkish variety registration legislation with the EU legislation is 89.26%. Strengthening the Turkish variety maintenance system, confirming the equivalence of Turkish practices for the variety maintenance practices with the EU, and adding of Turkey to the Council of Europe Decision No. 2005/834 / EC, and revising the production permit implementation which gives disadvantages to Turkish breeders were emphasized.

Keywords: Breeding, EU, seed, variety maintenance, variety registration

CONSERVATION OF SANLIURFA STEPPE BIODIVERSITY UNDER THE CONSERVATION AND SUSTAINABLE MANAGEMENT OF TURKEY'S STEPPE ECOSYSTEMS PROJECT

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Abstract

Turkey is quite rich in terms of its biodiversity. The country's diverse landscapes include forests, mountains, steppes, wetlands, and coastal and marine ecosystems and different forms and combinations of these ecosystems. Steppes are one of the most ecologically important and vulnerable ecosystems in the country's diverse landscapes. Turkey's steppe ecosystems include pastures, meadows, and grasslands and cover approximately 32 million hectares of the country. Steppes are generally distributed in Iran-Anatolian Phytogeographic Region in Turkey.

Steppes in Anatolia, where agriculture is one of the major economic activities benefiting from these ecosystems, deserve attention with diverse grassland communities, high plant species diversity and endemism rate and populations of globally threatened animal species. However, steppe ecosystems are one of the least presented ecosystems in the legal protected area network in Turkey, whereas it is a crucial condition for livestock development and agricultural genetic resources.

Conversely, the integrity of Turkey's steppe ecosystems faces numerous threats such as habitat loss and degradation, overharvest, and climate change. Currently, some of the projects are being implemented to support the conservation and sustainable management of steppes. One of them is "Conservation and Sustainable Management of Turkey's Steppe Ecosystems" which is financed by the Global Environment Facility (GEF), with Food and Agriculture Organization of the United Nations (FAO) as implementing agency. The Ministry of Agriculture and Forestry of the Republic of Turkey is the executing partners. The main purpose of the project is to improve the conservation of Turkey's steppe ecosystems through effective protected area management and mainstreaming steppe biodiversity conservation into production landscapes.

Keywords: natural resources, nature conservation, steppe ecosystyem, steppe conservation, Sanliurfa steppes

EFFECT OF ECONOMIC ANALYSIS OF AGRICULTURAL WATER IN HARRAN PLAIN

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Abstract

The vast majority of agricultural irrigation in Turkey is provided by gravity irrigation. However, with limited use of modern irrigation systems in Turkey are using the water resources more efficiently. In Turkey; Many fresh water ecosystems lose their ecological and economic value due to the fact that more water is needed from agricultural sources for the purpose of agricultural production and this water cannot be used efficiently. In Turkey, since the law came into force in 2012, it necessitates the provision of quality and quantity of use in accordance with the priority needs at the basin of water resources. Accordingly, water allocation scenarios should be created by considering the current conditions and economic analyzes should be made for each scenario. As of 2018, irrigated agriculture has been realized on approximately 166 000 hectares in the Harran Plain. Water transmission efficiency was 94%, while water application efficiency was 44% in Harran Plain irrigations in 2016. This shows that there is a loss of approximately half of the water delivered to the plain. In 2017, the amount of water discharged to the irrigation canals of the Harran Plain was estimated at approximately 6.34 billion m3. In an irrigation network, water application efficiency is expected to be not less than 50-60%. It has been calculated that 1.9 billion m3 of water can be saved by improving irrigation systems, increasing water application efficiency to 55% and accurate water pricing. With this water to be saved, 103.8 thousand hectares of additional cotton can be cultivated or 113 thousand ha of the existing product pattern can be irrigated additionally.

Keywords: Economic analysis of water; Irrigations; Water Management; Harran Plain

FORMATION OF YAKA EXTERIOR WITH GENDER DIFFERENCE, AGE DEPENDING ON UNDER THE CONDITIONS OF THE HIGH-MOUNTAIN KYRGYZSTAN

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Abstract

According to the main indexes of physique, one can judge the nature of the constitutional type of differently grown and gender groups of young yaks. From the mapped, indicators of the physique of all groups of animals it can be seen that during all the periods they grew, they were short-legged, stretched, bony, massive and compact. The reliability of these indicators, the difference between compared body measurements in bulls and heifers of group 1 at the age of 12 months and group 1 at the 18 months of age was statistically significant (above P = 0.999).

Keywords: bulls, heifers, young-yaks, female yaks, yaks-reproducers, castrated yaks

VITICULTURE AND FINISHING SYSTEMS IN SANLIURFA

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Abstract

The homeland of the vineyard is a region called Asia Minor, which includes Anatolia. Vine is an important plant for Turkey be cause of its grape yield and wide usage possibilities (molasses, cider, fruit juice, raisins, fresh table fruit, pestil etc.). The aim of this study is to determine the structure of the enterprises engaged in viticulture production activities, the different bond ingredient systems they apply and the types used, which have reached the point of extinction both in Şanlıurfa and in the whole region. The main material of the research is the data obtained through the survey by interviewing the producers producing in closing vineyards in Şanlıurfa province. In this study, a questionnaire was applied in 54 enterprises with a full count in vineyard farming enterprises. In the study, it was determined that a significant number of vineyard farming enterprises (64.29%) were in Hilvan in Sanliurfa province and 17.86% in bozova district. In the enterprises examined, it was found that the operators were on average 52.42 years of age, had an average of 28.16 years of experience in vineyard farming and a significant number (50%) were literate and educated at the primary school graduate level. 81.49% of the enterprises were involved in viticulture production activities as well as other agricultural production activities. It was determined that the land in which the enterprises were viticulture for the tolam land they processed had a share of 36% and the land in which they farmed pistachios had a share of 47.69%. 55.56% of enterprises were produced in Cilores, and 22.22% of the Horozkarası were produced. 50.0% of enterprises fınıshıng systems called serpene, 44.44% of them in the tapestry fınıshıng systems, 3.71% of them fınıshıng systems called herek and 1.85% by applying wire finishing system was determined to do bond farming. In addition, the semi-formal interview method of the bonds through inheritance, the need for irrigation infrastructure, high cost elements and high income from pistachio agriculture.

Keywords: Viticulture, finishing systems, Sanliurfa

TURKISH PLANT BREEDERS' RIGHT SYSTEM

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Abstract

Plant breeding is a long and laborious process. Genetic resources, financial support and personal motivation are needed for plant breeding. Turkey is a 65th member of UPOV, and has 15 years of experience on plant breeders' rights implementation. At this study, history of Turkish plant breeders' rights system, current situation and implementation, data of application and approving, has been demonstrated. The effect of Plant Breeders' Rights system to Turkish plant breeding sector was discussed. With 15 years of experience of Turkish plant breeder rights system, the problems and deficiencies of implementation were mentioned. In the light of these experiences, problems and deficiencies, opinions were presented for the improvement of the Turkish plant breeder rights system. In addition, recommendations have been made for countries that start newly or will start the plant breeders' rights system.

Keywords: Breeding, UPOV, PBR, Plant Breeders' Rights, Plant Variety Protection, Seed

WATER USE, MANAGEMENT AND SOCIAL IMPORTANCE

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Abstract

In the world, the need for food and water shows increase in parallel with the increase in world population. However, water resources are limited and current drought resulting from global climate changes leads to decrease in water resources gradually. Unfortunately, agricultural sector has been affected mostly due to this change, because agricultural production depends on nature and climate conditions, and so the most water consumption occurs in the agriculture sector. Water is a resource that has a vital importance for the society and it is well known that Turkey is not a water-rich country. The study is a compilation and has been prepared by using the data obtained from various institutions, books and articles. In this study, the importance, usage and social dimension of water are given. It was aimed to reveal the social importance of water and suggestions were put forward.

Keywords: Importance of water, water use, irrigation, climate change, water management

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A CHRONOLOGICAL APPROACH TO THE RELATIONSHIP BETWEEN AGRICULTURAL SECTOR AND INDUSTRIAL DESIGN

ÖMER FARUK EROL[1]*, FÜSUN CURAOĞLU[2]
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Abstract

The importance of the agricultural sector is indisputable for all countries in the world. Both the state policies of the countries and the new developments in the agricultural sector reveal the importance of investments in agriculture for a sustainable life. At this point, within the scope of industrial design discipline, which is one of the important stakeholders of scientific and technological development, the relationship between agricultural machinery and technologies is of primary importance in parallel with the realities of the century we live in. New product development processes are also among the priority areas for technology-oriented product designs of enterprises producing agricultural vehicles. The human-tool-production relationship that started with the history of humanity has developed in a dynamic relationship with each other for thousands of years in the field of agriculture. In order to contribute to the solution of the concerns about the future of agricultural production, it is of utmost importance to develop new design-oriented perspectives for the solution of agricultural-based problems that we have started to live in and which are expected to accelerate in the future. In this study, since the emergence of agriculture, the contribution of design to the development of agricultural production techniques within the scope of agricultural tools-man-production relationship has been considered as a priority. In this research, the relationship between agricultural tools/machines and industrial design is examined chronologically in the context of the history of design and the importance and contribution of design to the agricultural sector is discussed. In the research, literature review was made within the scope of qualitative research method; Since the emergence of agriculture, the contribution of the design of agricultural tools/machines to the development of agricultural production techniques has been examined chronologically.

Keywords: Industrial design, New product development, Agricultural machinery and technologies, R&D, Innovation.

A STUDY ON THE DEVELOPMENT OF PISTACHIO HARVESTER

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[1]Harran University

Abstract

The aim of this study is to develop a harvesting machine for the harvesting of pistachios. The parameters required for the harvesting of Pistachio by machine were collected in the peanut area of the Rotary Capital Directorate of the Faculty of Agriculture within the Harran University Osman Bey Campus. The ripening time and fruit characteristics of the pistachio trees were investigated and the appropriate mechanism and technique for successful harvesting were determined and the design of the harvester was started. The aim of this study is; without touching the tree trunk, it will only come into contact with the ripe fruit and develop the mechanism that can make the harvest process without damaging the branches and leaves.

In this study, the process from the design of the vacuum pump harvester machine to the prototype is briefly summarized. All mechanical and physical properties of the machine are given. All laws, parameters and formulas relating to the design of vacuum, conveyors and rollers are described. The calculations and the results obtained were evaluated as tables. As a result; The optimum flow rate was determined as 39611.1 m3 / hour, 6480 rev / min and harvest yield as 80%.

Keywords: Pistachio harvesting machine, vacuum harvester, vacuum harvesting, mechanical harvesting, pistachio harvesting

DETERMINATION OF YIELD AND SOME YIELD COMPONENTS OF DIRECTLY SOWING RED LENTIL AFTER DIFFERENT HARVESTING METHODS OF WHEAT

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Abstract

Wheat-red lentil crop system is widely applied in agricultural areas based on rainfall in Southeastern Anatolia Region. However, the stubble remains on the field burned by the farmers especially after the wheat harvest. This causes both environmental disasters and inefficiency of the soil. Direct sowing is a method of planting, which is characterized by sustainability in agriculture, improvement of soil structure, less fuel consumption and environmental friendliness. In this study, yield and some yield components were investigated in directly sowing red lentil after different four harvesting methods (1: Making straw by chopper mounted on combine-harvester and spread the straw to field surface, 2: Making straw with chopper mounted on tractor and spread the straw to the field surface after harvesting with combine-harvester, 3: Harvesting the wheat by combine-harvester and leave the stubble on the field, 4: Making straw with prismatic baler on tractor and remove from the field after harvesting with combine-harvester) and two different cutting height (10 cm and 20 cm) of wheat. As a result; in 10 cm cutting height, plant height were found higher than 20 cm cutting height. The highest yield is obtained from the harvesting method of making straw by chopper mounted on combine-harvester and spread the straw to field surface.

Keywords: harvesting method, direct sowing, lentil, yield

EFFECTS OF ELEMENTAL LIQUID SULFUR ON SOIL

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Abstract

Today, the use of sulfur in agriculture has been largely addressed, in particular as a plant protection agent and fertilizer. It is one of the oldest known chemical elements. Sulfur is the basic building block of amino acids such as cysteine and methionine in plants and has a significant impact on the quality of the product. In terms of chemical properties of the soil, the importance of heavy metal toxicity and salinity tolerance in many biological processes are becoming increasingly subject to scientific studies. Liquid sulfur is a very useful active substance for the improvement of the chemical content of the soil and for adjusting the pH of the soil. In alkaline soils; The use of liquid sulfur in agricultural applications has been proposed to increase the density of H + ions in the environment and / or to activate existing H + ions. In this study, the application of liquid elemental sulfur improved the structure of the soil and the root development of the plant had a positive effect on nutrient uptake and increased yield by 10 percentage ratio.

Keywords: Elemental Sulfur, pH level, soil improvement, soil, plant production

HASSAS – WIDESPREAD APPLICATION OF SUSTAINABLE PRECISION AGRICULTURE PRACTICES IN GAP REGION AND FARMERS' WEB INTERFACE

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Abstract

Southeastern Anatolia Project Regional Development Administration (GAP BKİ) supports sustainable agriculture through the Widespread Application of Sustainable Precision Agriculture Practices in GAP Region project. GAP BKİ collaborated with TÜBİTAK Space Technologies on this project. HASSAS Project aimed to improve crop yields of farmers while using optimal agricultural inputs such as fertilizers or pesticides. In the first phase of the project, satellite multi-spectral and SAR data and aerial hyperspectral imagery were collected to develop semi-automatic agricultural analysis software. The software lets agriculture experts analyze crop fields and share their findings via a farmer portal. In the second phase, variable-rate fertilization applications are performed for the corn crop by using satellite and drone imagery. A web interface was also developed to connect the farmers and agricultural engineers/experts. Our findings will be shared with related institutions and help sustainable agriculture in the region.

Keywords: Precision Agriculture, Corn, Cotton, Variable Rate Fertilization

Oral Presentations
ZF-TYVSB-00-Department of Agricultural Structures and Irrigation

EFFECT OF AMOUNT OF IRRIGATION WATER ON LEAF ANATOMY

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Abstract

In the study it was aimed to examine the changes occurring anatomically in the leaf of cutton (Gossypium hirsitum L. cv. Stoneville 468) by effect of irrigation which has an importance in plant cultivation.

In irrigation period of 2015, the irrigation issues 100 % and 50 % were determined according to the amount of evaporation obtained from Class A Pan and irrigation was applied by using drip irrigation system. For anatomical studies, cross sections were taken from the samples of the leaves belonging to both irrigation issues by microtome and were examined by light microscopy. The leaves in both issues were bifacial and amphistomatic. One layered palisade parenchyma was formed by long cylindirical shaped cells arranged with tiny spaces. Spongy parenchyma was 4-5 layered in 100 % issue, but it was 3-5 layered in 50 % issue. Big and small vascular bundles were collateral type. The leaves had glandular and non glandular hairs, and druz crystal. According to the biometric measurements performed in some tissues in both issues, the changes were observed.

In conclusion, it was figured out that the amount of irrigation water applied affected the anatomy of the leaf belonging to cutton cultivar studied. Thus, leaf anatomy should be examined by applying different amount of irrigation water and amount of optimum irrigation water should be determined.

Keywords: Plant histology, Harran Plain, Drought stress, Field crop

Oral Presentations
ZF-ZTB-00-Department of Livestock

ANALYSIS POTENTIALITY OF FATTENING PERFORMANCE OF ANGUS AND LIMOUSINE CATTLE RAISED IN GAZIANTEP PROVINCE USING RICHARDS GROWTH MODEL

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Abstract

In this research, the possibility of fattening performance of Angus and Limousine cattle bred in a commercial farm located in Gaziantep province were researched by Richards growth model using weight-age data obtained between 2011 and 2013 years. Coefficients of determination and sum of square errors were detected as 0.983 ± 0.0012 and 29161.15 ± 592.648 for Angus, and 0.981 ± 0.0014 and 32101.33 ± 721.318 for Limousine cattle. Parameters A (Mature weight), B (Rate of gain) k (Rate of maturing) and M (Point of inflection) estimated by Richards growth model were 779.552 ± 5.4579 kg, 0.854 ± 0.0132, 0.004 ± 0.0004/month and 0.717 ± 0.0632 for Angus and, 762.520 ± 6.3959 kg, 0.763 ± 0.0145, 0.006 ± 0.0006/month and 1.439 ± 0.0878 for Limousine cattle. As a result of the research, it was found that the differences between the mean values of the predicted parameters for both breed were statistically insignificant (P > 0.05). According to this, it can be said that Angus and Limousine cattle in the conditions of Gaziantep province have similar fattening performance during the fattening activity.

Keywords: Angus, Limousine, Fattening Performance, Growth models

DETERMINATION OF MILK PROTEIN POLYMORPHISM IN NORDUZ AND KARAKAS SHEEP BREEDS USING PCR-RFLP TECHNIQUE

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Abstract

Norduz and Karakaş sheep have been adapted to Lake Van region for many years as being domestic genetic resources and meat-milk-offspring-fleece traits are a reliable economic resource especially preferred by small family businesses around the area.

The PCR-RFLP technique is used as polymorphic genetic markers in the determination of quantitative traits or diseases determined by functional genes in farm animals as much as plants and humans. As polymorphisms is detected, it is possible to select individuals carrying the desired genotypes by making use of the statistical relationships between genetic markers and traits.

In this study, milk protein genes, casein (CSN3), lactoalbumin (LALBA1,2) variants and lactoglobulin (LGB) of Norduz (n = 27) and Karakas (n = 36) sheep breeds found in Van-Yüzüncü Yıl University, Faculty of Agriculture, Livestock Research and Application Farm and Kurubas village were examined based on PCR-RFLP technique. As a result, CSN3 (769 bp) and LBG (849bp) gene regions were not be amplified by PCR, whereas PCR products were obtained from LALBA1 (693 bp) and LALBA2 (843bp) gene regions. However, the expected sizes of alleles of LALBA1 digested with EcoR1 and LALBA2 digested with HindIII could not be observed, therefore there were no polymorphisms detected in individuals under investigation.

This result considered as the first report on the issue has moved the aim of the research to the next stage and directed to Single Nucleotide Polymorphisms (SNP), which is a more reliable method for the detection of polymorphisms in other related loci such as growth differentiation factors (GDF) gene of milk protein genes.

Keywords: Norduz and Karakas sheep, milk protein genes (casein, lactoalbumin, lactoglobulin), PCR-RFLP technique, genetic polymorphisms

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EXAMINATION OF BEEKEEPING AND HONEY CONSUMPTION HABITS IN SOUTHEASTERN ANATOLIA

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Abstract

This study was conducted with beekeepers registered to the Association of Beekeepers in seven provinces in Southeastern Anatolia (Adiyaman, Diyarbakir, Gaziantep, Mardin, Siirt, Sanliurfa, Sirnak). Among the beekeepers participating in the questionnaire, 46.7% only beekeeper, 26.7% had 6 to 10 years of beekeeping experience, 77.8% were migratory beekeeper. Among the provinces, the highest honey yield per colony was obtained in Sanliurfa province (16.8±1.848 kg) and the lowest in Sirnak province (6.83±1.175 kg) ($P < 0.01$). It was determined that the beekeepers' educational status, professional experience periods and bee races that rearing did not affect the yield of honey per colony ($P > 0.05$). In the fight against fake honeys, beekeepers recommended increasing ministerial inspections and to impose dissuasive punishments. In eight provinces in Southeastern Anatolia (Adiyaman, Batman, Diyarbakir, Gaziantep, Mardin, Siirt, Sanliurfa, Sirnak), 80.7% of the surveyed consumers were male and 36.1% had undergraduate and higher education. Husbands (57.4%) make food purchases of the house. Filtered honey consumption (6.7±0.60 kg/year) is higher among to consumers. Consumers participating in the survey, buy honey primarily according to price (47.8%) and trademark name (21.7%). 70.6% of the participants stated that they could give price difference to consume organic honey. 15.7% of the consumers reported that they bought honey from television. Although 56.6% of consumers stated that fake honey did not affect honey consumption habits, 43.4% stated that they were affected.

Keywords: Honey bee, survey, beekeeping, honey consumption, fake honeys

GENERAL INFORMATION ABOUT GOOSE BREEDING IN SANLIURFA CONDITIONS

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Abstract

Abstract: Geese, mostly known as poultry in the cold zone, can also adapt to the warm conditions of Sanliurfa. If a continuous source of water and canopy can be provided, there is no obstacle to growing in our region. When meadows and pastures are established, geese are animals that can be grazed well. Thus, it can save 30% of feed costs. They can graze the lawn too short and stay on the meadows for the rest of their lives and do not need a private shelter. They can also survive in places without water. Goose feather, liver and flesh are a major source of income. Geese can be used in weed control and can recognize young weeds and eat them without damaging the main plants and can be used in weed control without using pesticides. They are more resistant to diseases and environmental conditions than chickens and turkeys. They are easy and inexpensive to grow and maintain compared to other birds. They can easily be accommodated in very simple shelters or even in a part of the shelters of other animals. Due to their resistance to diseases, drug costs and mortality rates are low. They are easy to maintain after some attention during chick periods and can continue their lives without any problems.

Keywords: goose palace, gosling, linda goose, goose pasture

HISTORY AND DEVELOPMENT OF KYRGYZ TAYGAN HUNTER DOG BREED

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Abstract

Kyrgyz taigan is a kind breed in Central Asia of greyhound. It is used for hunting, hunting wolves, foxes and rabbits because run fast their smell and sight senses are well devloped they are very good at tracking and detecting prey. These dogs which are ancestors of the Turkish hounds with hunds and fragile looking skulls and body structure are considered to be very rare. Hounds are believed to have been brought to Anatolia during in migrations from Central Asia.

Keywords: Kyrgyz taigan, fast running, hunting, Turkish hounds

LAMENESS AN IMPORTANT WELFARE PROBLEM IN SHEEP

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Abstract

One of the most important welfare problems encountered in sheep breeding is lameness. Lameness is often the result of the effects of an orthopedic or systemic disorder on the locomotor system. Lameness leads to atrophy of the muscles over time in the limb as well as causing the limb to fail to fulfill its exact function. Lameness; weight loss, decrease in live weight, decrease in infertility, decrease in milk yield and lactation period and early withdrawal from breeder. Lameness; fractures as a result of any trauma of the bones can be seen as a result of nail problems such as arthritis, foot-rot , interdigital dermatitis, contagious digital dermatitis and systemic diseases (foot and mouth disease-brucella). When the methods of protection are considered, the choice of stable ground is nutrition, foot baths and nail care.

Keywords: Sheep, lameness, welfare

MITOCHONDRIAL 12S RRNA GENE POLYMORPHISM OF VILLAGE CHICKENS IN ŞANLIURFA REGION

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Abstract

Domestic poultry are widely spread around the world, and archaeological studies show that their domestication occurred in China 8.000 years ago. The mitochondrial genome of the chicken is a circular DNA, consisting of 37 regions, 2 rRNAs, 22 tRNAs, 13 protein-encoding genes. In this study, the genetic structure of village chicken in Sanliurfa region were determined by molecular techniques. Animals used in the study was composed of village chickens grown in Sanliurfa region. Mitochondrial 12s rRNA region of the chicken DNA samples were amplified by polymerase chain reaction technique. Sequencing was performed as direct sequencing from PCR products. Sequencing for the 12s rRNA gene region was carried out in double chain. Sequence data were edited using Bioedit program. DNA polymorphism analysis was performed with DNaSP program. G+C ratio, haplotype and nucleotide diversity values, respectively, 0.473, 0.756±0.058 and 0.00194±0.00029, respectively. Genetic distances were calculated between chicken haplotypes between 0.000-0.006. As a result, mtDNA polymorphisms have been identified in Sanliurfa native village chickens based on 12s rRNA gene sequence information.

Keywords: Chicken, 12s rRNA gene, polymorphism

MOLECULAR ANALYSIS OF MITOCHONDRIAL CYTOCHROME B GENE IN ANGORA GOATS

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Abstract

Domestic goats (Capra hircus) were domesticated in the Near East in the Neolithic era 10.000 years ago and spread to all continents of the world. The Angora goat, which has a long history in Anatolia, has been cultivated in Central Anatolia for centuries. The mohair is produced from the Angora goat. In phylogenetic studies on farm animals, mitochondrial DNA is used as a molecular marker. Goat mitochondria genome; protein encoding 13 genes, 2 ribosomal RNA gene regions, control region and contains 22 tRNA regions. Mitochondrial cytochrome b (Cyt b) gene polymorphism was studied by using PCR-RFLP method. Genomic DNA was isolated from Angora goats. Goat Cyt b gene was amplified with PCR reaction. PCR products were cut with HaeIII restriction enzyme. Polymorphism could not be detected in terms of the gene of interest as similar cut-off parterns (679, 230, 141 bp) were displayed in all samples.

Keywords: Angora goat, cytochrome b (Cyt b) gene, PCR-RFLP

USE OF FOOTBATHS IN CATTLE

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Abstract

Foot baths in cattle are used to prevent or treat interdigital skin and infectious foot diseases. Foot baths, which are of great importance in terms of nail health and animal welfare, are a method of protection that is provided with small costs and suitable for herd. Foot baths are examined in two groups as portable and fixed. Portable foot baths can be used as an extra mobility because they are used in continuous mobilization. As bath solutions are used for protection and treatment, the frequency of application may vary. For protection purposes, the foot and nail score is taken into account. It is more effective on clean nails. Nail cut increases the effectiveness of the bath application. For footbath; antiseptics such as formaldehyde, copper sulphate, zinc sulfate, creolin, potassium permanganate, rivanol, iodine can be used. Each antiseptic or solution has advantages and disadvantages compared to the other.

Keywords: Cattle, footbath, foot,antiseptic

WASHBOARDING BEHAVIOUR OF HONEYBEES

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Abstract

The honey bee colony has always attracted the attention of humanity in terms of its social life and behavioral characteristics, and their various behaviors have been defined by scientific observations. In this study, the behavior of honey bees called as "washboarding" or "rocking" was discussed. Washboarding behavior is observed as a group activity of worker bees. Behaviour is carried out by workers older than 13 days old, usually 15-25 days old, on the inner and outer surface of the hive. Behavior refers to the swinging of workers back and forth on the hive surface between 08 am and 14 pm hours in the morning. In the meantime, it was reported that their mandibles had contact with the hive surface. In order to explain the washboarding behavior, observations were made in terms of the frequency of the behavior, the age of the workers, the time of day and the surface texture of the hive. Although many observers suggest that bees clean the surface, but no one has been able to suggest a possible cause on the surface on which this behavior is exhibited. It is also stated that it may be a kind of nest maintenance task. Another suggestion on the cause of the behavior was to prevent the accumulation of pathogens by polishing the surface. In addition to hives, this behavior has been observed in feral colonies, but the aim of the behavior is still a mystery.

Keywords: Honeybee, washboarding behaviour, rocking behaviour.

Poster Presentations
ZF-BBB-00-Department of Horticulture

EFFECT OF DIFFERENT INTENSITY BUD PRUNING PRACTICES ON YIELD AND QUALITY IN SARILOP FIG CULTIVAR

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Abstract

Winter pruning, one of the basic fruit growing techniques, as in other fruit species; fig production is also important in terms of yield and quality.

In this study, the effect of winter pruning applications with different eye density on goble shape pruning trees in fig orchards on plant development, dry fruit yield and quality will be revealed. In this study, Sarılop Fig variety was chosen which forms a large part of our country's fig production plantation. The study was initiated in 2019. In 2015, the fig garden, which was formed from trees planted at 6x4 m intervals, was used in the Fig Research Institute. According to the randomized block design, each application was designed with 3 replicates and 3 replicates per repetition; winter pruning (B3, B5 and B7) and two separate control applications (Bk, B0) were performed at three different eye intensities. According to this; control application Bk (no pruning) and B0 (no tip taking application) B3 = 3 eyes / shoot, B5 = 5 eyes / shoot, B7 = 7 eyes / shoots were performed in a total of 5 different applications. At the end of the study, when the dried fig fruit was examined as scrap crack and normal fruit, the difference between blocks was found to be 74,49 % for the highest B7 application, followed by B5 application. The highest scrap rate in the Bk control application was 56,28 % and the lowest was 15,78 % in B3 application. The study will be continued next year and the findings will be evaluated on a yearly basis.

Keywords: Sarılop, Fig, Winter Pruning

EFFECTS OF POTASSIUM INTAKE ON STRESS FACTORS IN PLANTS

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[1]Van Yüzüncü Yıl University

Abstract

Plants are under the influence of many abiotic(low and high temperatures, deficiency or excess of nutrients, air pollution, heavy metals, drought, excess water, salinity and radiation) and biotic(viruses, bacteria, disease-causing fungi and so on. and pests) stress factors in growth and development processes. It is known that potassium provides resistance to stress factors that plants are exposed to.

Potassium (K +) is the main nutrient for plants after nitrogen, which is more uptake than other plant nutrients. Plants benefit from the K + form of potassium from soil. Potassium is one of the macro nutrients taken into the plant and has significant vital effects. These are metabolic, physiological and biochemical effects.

In addition, potassium helps to transport plant nutrients and photosynthesis products, increases protein content within the plant, balances turgor pressure and plant water consumption, increases resistance to cold stress, and contributes to the plant's mechanism of resistance to biotic stress factors such as diseases and pests. Potassium plays a protective role in plants under environmental stress.

In this study, the state of the effectiveness of (K +) in stress physiology will be evaluated. It will be discussed how potassium affects metabolic, physiological and biochemical aspects of stress factors in plants. These effects will be exemplified according to the results of the research.

Keywords: Potassium, macro nutrient, stress

STUDYING THE TYPES OF WOODY PLANTS USED IN THE DESIGN OF PARKS IN SOME CITIES OF NORTHERN IRAQ

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Abstract

The study will conducted in the parks of some cities in Northern Iraq. (Erbil, Sulaymaniyah, Dohuk, and Halabja). During the period from; 1st, March 2019 to September 15th, 2019. For study the types of woody plants used in the design of parks in the Sami Abdul Rahman Park, Minara Park, Shanadar 1 & 2 Parks, Gilkand Park, Hawary Shar Park, Azade Park, Daik Park, Bakhe Gishty, Azade Panorama Park, Mohamad Bekhal Park, Dohuk Dem Park, Halabja Park, Bakhe Gishty, Baran Park, and Kubra Hamedpur Park. To find out the types of woody plants, the purpose of cultivation or uses, responsiveness, and success of plants in the site. Plant age or number of years of planting, the stem diameter and plant length and plant health status will be determined. According to the result when visited to all parks that will be indicated 70 species woody plants, and total numbers of woody plants had (54% trees, 36% shrubs and 10% climbs). Also from all sections that will be 39 families, types of woody plants will be 36 evergreen and 34 deciduous. Through the results and conclusions of the study, we reach the following recommendations to several parties (Recommendations to the planning authorities, Recommendations to the executive parties, Recommendations to the Ministry of Municipalities and the Department of Parks, and Recommendations to the parks managements)

Keywords: Green area, park, woody plant species, Northern Iraq

Poster Presentations
ZF-BKB-00-Plant Protection Department

DETERMINATION OF PESTS IN COTTON VARIETIES GROWN IN HARRAN PLAIN CONDITIONS OF SANLIURFA PROVINCE

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[1]GAPTAEM

Abstract

In 2014-2019, 3 cotton varieties were studied in cotton cultivation areas of the GAP region cotton breeding project in Harran plain of Sanlıurfa. These varieties; BA 440, Candia and ST 498. A total of 20 cultivars were planted in a planting area in random blocks. During the vegetation period from planting to harvest, the field was visited weekly and the condition of cotton pests was monitored. Considering the economic loss threshold, chemical control have been made as necessary. In 2015-2019, biotechnical control against greenworm, pink wolf and spiny wolf was used. It is aimed to break the population of these species by mass capture with sexually attractive traps.

As a result of 5-year observations and data evaluation, Lygus spp. In 2015, and white fly damage in 2016-2017 were more than other years. In 2017 and 2018, the spiky wolf population increased compared to previous years. Again, in 2018, the aphid population increased remarkably. Although it has not suffered a loss as in 2015, Lygus spp. pest has a population that will require chemical control in 2018. Considering 2019, the North American Beetle (Nysius raphanus (Hemiptera)) was observed throughout the season but did not cause any economic damage. It also covered the whole season again this year, especially fighting with aphids. Generally speaking, the damage of cotton to absorbent insects has been increasing in recent years.

Keywords: Cotton, Lygus, GAP, aphids, Sanliurfa.

NEW RECORD OF LIRIOMYZA CICERINA RONDANI FOR THE AGROMYZIDAE (DIPTERA) FAUNA OF ÇANAKKALE PROVINCE

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[1]Tarım ve Orman Bakanlığı

Abstract

Chickpea is exposed to many diseases and pests in vegetative and generative development periods. Among the sixty insect species known to feed on chickpea, the most damaging species is the chickpea fly. This study carried out in chickpea fields in 2019 year in Çanakkale (Merkez) province. In the study, damaging leaves with galleries were observed on chickpea. It was found on leaves and branch that four adults from Liriomyza cicerina Rondani (Agromyzidae: Diptera). Adults are fed with leaves. Feeding places on leaves have yellowish spots. Cause of fungal diseases may develop in opened wounds. The main damage is done by larvae. Hatching larvae are fed in parenchyma tissue. As a result of feeding, a light colour gallery like rope is formed, then it takes the form of bubbles and covers the entire leaf blade. Excessively damaged leaves become yellow and fall out. Spills ocur in the lower branches of the plant and the yield is reduced. In case of loss, crop yield loss is 40%. Pest is a new record for the fauna of Çanakkale province.

Keywords: Chickpea, Liriomyza cicerina, Plant Protection, Çanakkale

THE POSSIBILITIES OF POTENTIAL USE ON HERBIVORE INSECTS OF LACTOBACILLUS ACIDOPHILUS (MORO, 1900) HANSEN & MOCQUOT, 1970 (LACTOBACILLACEAE: LACTOBACILLALES) BACTERIA

SULTAN ÇOBAN[1] EMİNE ÇIKMAN[1] SEVAL ZEYBEK[1]
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Abstract

Today, the pesticides using in the 'Chemical Control', which is widely used in the control against the factors, unfortunately cause serious irreversible diseases and severe damage to all living things, especially humans, and their environment. For this reason, within the scope of 'Integrated Control' which is formed by using some control options together, even choosing an environmentally friendly alternative control that can minimize the use of chemical control is an important step in preserving living and environmental health. 'Repellent Effect', which is one of the 'Direct Resistance' options created by plants against any stress factor, can sometimes be realized by means of substances or compounds naturally present in the plant content, sometimes by exogenous application of some substances or compounds that can stimulate the plant's resistance can be activated. In particular, products that can trigger direct resistance to certain important pathogens or microbial factors in some plants are called as 'Plant Activators'. Indeed, one of these products, Lactobacillus acidophilus (Moro, 1900) Hansen & Mocquot, 1970 (Lactobacillaceae: Lactobacillales)-containing plant activator is marketed with the trade names given in Turkey. It is known that L. acidophilus bacteria, which are among probiotic bacteria, have a balance between intestinal microbes through their antimicrobial activity and improve the condition of intestinal environment in humans. However, although many studies have been conducted on the effects of L. acidophilus, which has an important function on bacteria or fungals in the intestinal environment, in the gastro-intestinal tract of humans, studies on the use of this bacteria on pests are very limited. For this reason, it is very important to increase the existing specific studies on the use of L. acidophilus bacteria or plant activators containing these bacteria and using in plant's improve on pests by means of various researches and to develop ecological friendly alternative control methods in the management of herbivore insects.

Keywords: Lactobacillus acidophilus, plant activators, repellent effect, herbivore insects, alternative control

THE PRESENCE AND SPREAD OF SCARABAEUS SACER (LINNAEUS, 1758) (COLEOPTERA: SCARABAEIDAE) IN KARACADAĞ MOUNTAIN

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Abstract

Scarabaeus sacer (Linnaeus, 1758), known as "The Sacred Dung Beetle" in Old Egypt. It is an active species that attracts attention among dung insects according to both morphological and ecological characteristics. The population density and preference behavior of some scarabs against different pitfall traps and organic fertilizers were studied as a Phd project in the area of Karacadağ and during 2017-18. The thesis was organized in Karacadağ Mountain. Karacadağ was separated into four regions and each regions were visited every fifteen days between May and October (I. Siverek (Şanlıurfa), II. Viranşehir (Şanlıurfa), III. Derik (Mardin), IV. Çınar (Diyarbakır). In this study pit traps, water traps and light traps were used to collect adults of this species. The feces of cattle, donkeys, sheep, camel and winged animal were used as attractant source in the traps as well as in open field experiments. At the same time, independent of the traps, animal feces in the field were controlled physically and adults were taken as examples. According to the results obtained from field studies; a total of 13 including 10 and 3 adults were collected during 2017 and 2018 respectively. All collected specimens were found in cattle faeces. They were not found in the other fertilizers. Also, 4 adults from pit traps, one adult from light traps and the remaining 8 adults were collected without traps in area. No species were found in the water traps which were used. S. sacer was first record for Şanlıurfa Mardin and Diyarbakır provinces.

Keywords: Scarabaeus sacer, Scarabaeidae, Karacadağ

THE USE OF PECTICIDE IN ŞANLIURFA, TURKEY AND THE WORLD

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Abstract

In ancient times, people started to do farming by becoming sedentary instead of hunting and gathering. They realized that there were factors damaging the products they produced at that time. People therefore, turned to new searches to protect their products from these harmful factors. In the 7000 BC, humans developed some methods to remove pests or destroy worthless plants during planting periods. Some people tried the methods by planting with considering the particular times of the month, and some preferred to remove insects from plants by hand or by making noise. From then on, the use of pesticides is based on very old history. The first known pesticide is the elemental sulphur powder, which was used in Mesopotamia approximately 4500 years ago during the ancient Sumerian period. BC 1500's records have been found that insecticides were used against lice, fleas and wasps which are harmful on a papyrus. Ob the other hand, Chinese used ants to protect trees from insects, and they used it in combating against garden bugs in 900 AD. The first substances used as pesticides are arsenic and sulphur. Until World War Two, a limited number of substances were used as a part of the chemical struggle against plant pests. They were mainly copper, mercury salts and sulphur as a fungicide, and they were used such as arsenic and cyanide as poisons for struggling against insects. The widespread use of pesticides in the fight against insects began in the mid-1940s. After the first synthetic pesticide, DDT (dichlorodiphenyl trichloroethamine), was formulated by a German scientist in 1873, the Swiss chemist Paul Muller determined the pesticide properties in 1939. In 1948, he was awarded the Nobel Prize in physiology and medicine for his work on this miracle compound, mainly because it had an important effect on reducing insect-borne diseases such as malaria and typhoid fever.

However, studies have revealed the side effects of this miracle compound, in which it caused genetic degradation of plants. In addition, insects that were immune to DDT were developing defence mechanisms that could ensure their sustainability. Unlike most insecticides acting on only one or two types of pests, DDT could destroy hundreds of different species. The first serious criticism about the pesticides emerged in a book named "Silent Spring" written by biologist Rachel Carson in 1962. In a result of many more negative effects it has, DDT was banned in the US and Europe in the 1970s, and Turkey in 1980s. After WW2, when it was difficult to supply pesticides of plant origin to the country, the USA and other countries turned to organic chemicals.

Keywords: Pesticide, World, Turkey, Şanlıurfa

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INVESTIGATION OF ECONOMIC EFFECTS OF PERIODICITY IN PISTACHIO PRODUCTION

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Abstract

In recent years, countries such as Mediterranean Countries, Near East Countries, USA and Australia have started to give great importance to pistachio cultivation. The reasons for this are; It can be shown that the fruit of pistachio is very valuable, that plant cultivation can be done even in the most unfavorable soils and places where annual rainfall is very low and that it brings economic good income to the grower. In 2017, pistachio production was 1 115 066 tons worldwide. When the production of pistachios in the world is examined; Iran with 48.11% production (574 987 tons) is in first place , America with 22.73% production (271 650 tons) is in second place and Turkey with 6.53% production (78 000 tonnes) has taken fourth place at worldwide pistachios production. However, the US has recently improved its production and irrigation techniques, continuously increasing its production volume and becoming a competitor to Iran. Periodicity is the most influential factor in the production of pistachio nuts. It has been demonstrated by various studies that the periodicity seen in pistachio plant can be minimized by taking various technical measures. Irrigation is of great importance in these technical measures. In the researches, it was found that irrigation yielded higher yields (30-50%) in the normal yield year, and in the year when periodicity was observed, it was found that crops could partially be harvested with the effect of irrigation. In addition to good yield in pistachios, it is necessary to irrigate in order to obtain high quality, full and high cracked fruit. According to the results of the study conducted by Bilgel (2001); It was found that irrigation; increased the yield by 50%, decreased the effect of periodicity, increased fruit size, crackling and shoot length. In this study, economic effects of periodicity on producer were investigated in pistachio production. The data obtained from a study conducted by GAP Agricultural Research Directorate with sample farmers producing pistachio in 1 village in Şanlıurfa province and the studies in literature were utilized. When the data for the 2017 in which periodicity is observed, it is determined that total costs of pistachio farms in 85 decares area are 17 528 TL, GPV is 35 000 TL and net profit is 16 955 TL. As of 2018 productive year, the total cost of the surveyed companies is 28 140 TL in 85 decares area, GPV 170 000 TL and net profit is calculated as 144 780 TL. It was found that the profits of the enterprises decreased by 80% in the year in which the periodicity was observed, and the reason of this was that the increase in the effect of the costs on the income as a result of the excessive decrease in the yield. Giving importance to irrigation in the Pistachio production in Turkey will help to prevent the high economic losses experienced by farmers in the period in which it is the observed periodicity.

Keywords: Pistachio, Periodicity, Cultural processes, Yield

Note: This study was produced from the master's thesis of the first author.

INVESTIGATION OF MEAT CONSUMPTION HABITS OF SYRIAN REFUGEES IN CHANGING LIVING CONDITIONS BEFORE AND AFTER MIGRATION; THE CASE OF ŞANLIURFA

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Abstract

Turkey was the country most affected by the migration movement that occurred in Syria in 2011. Sanliurfa province in a second place after Istanbul in the list of provinces housing refugees in Turkey. According to April 2019 data, there are 450 000 Syrian refugees registered throughout the province. In this study, the effect of the migration movement on meat consumption habits as a result of changing living conditions of refugees was examined. There has not yet been a study on meat consumption of refugees in the province. This study is a first. The data used in the study were compiled in May 2019, and a total of 890 surveys were conducted in the acquisition of data, as well as focus group interviews with 2 different groups. In this study, chi-square test and logistic regression analysis were performed to evaluate descriptive statistics and frequencies as well as changes in pre-war and post-war meat consumption of households. Analysis results show that white meat consumption has increased in meat consumption habits, meat consumption has decreased in nutrition, and meat consumption has changed statistically significantly depending on the help of individuals and the revenues they receive has been identified. From this point of view, it has been shown that consumption habits, which are an indicator of the welfare level of the refugees today, have been adversely affected as a result of changing living conditions compared to their pre-war and post-war situations.

Keywords: Refugees, Income, Meat Consumption, Financial Aid, Living Conditions

Note: This study was produced from the master's thesis of the first author.

THE IMPORTANCE AND PLACE OF OLIVE CULTIVATION IN THE TURKISH ECONOMY

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Abstract

Olives and olive oil have had an important place in nutrition and human health since ancient times. Many studies conducted as a result of developing technology revealed that olives and olive oil are of great importance for human health. World olive production is widely carried out in Mediterranean countries. Olive production areas in Turkey widely Mediterranean, Aegean, Marmara and is located in the South-eastern Anatolia Region. This study examined the structure of foreign trade, as well as the olive and olive oil production in recent years in Turkey and secondary data were utilized for this purpose. When analyzed the data of 2017, 2.1 million tons of olive production is made in Turkey. With this production volume, it constitutes 9.9% of the world olive production. While 460 000 tons of this production is allocated as table olives, 1 640 000 tons is processed and 287 041 tons of olive oil is obtained. Turkey by the 10.1% of the world's olive oil exports in 2017 (50 217 tons) took 4th place. Subsidies for olive cultivation in Turkey; difference payment, soil analysis, fertilizer and diesel support. The current amount of subsidies is increased every year for the growth of the olive and olive oil sector. Because of subsidies to olive production in Turkey will accelerate the growth of the olive and olive oil sector and increase olive oil export revenues are expected to benefit the country's economy.

Keywords: Olive, Olive Oil, Olive Oil Export

Note: This study was produced from the master's thesis of the first author.