PROCEEDINGS OF ABSTRACTS
II. INTERNATIONAL EDIBLE & OIL SEEDS CONGRESS
EDIBOIL 2024

31 OCTOBER - 2 NOVEMBER, 2024

Megasaray Westbeach Hotel, Antalya, Turkey

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Organized by
Trakya University
International Researchers Association

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WELCOME NOTES

You are welcome to our International Congress Edible and Oil Seeds which is organized by Trakya University and the International Researchers Association. The congress will be held in Megasaray Westbeach Hotel, Antalya, Turkey, on 31 October - 2 November, 2024 with the support of several national and international partners.

The Congress topics will cover Edible and Oil Seeds: Plant Breeding and Genetics, Molecular Genetics and Biotechnology, Biology and Physiology, Genetic Resources, Plant Protection, Agronomy and Production, Animal feeding, Food Science and Nutrients Fats, lipids, and Protein studies, Trade and Economy,

Oil crops are rich sources of oils, proteins, minerals, vitamins, and dietary fibers for both human and animal feeding and provide the raw material for the production of biodiesel. Oil crops are soybean, cottonseed, sunflower, canola, rapeseed, peanut, safflower, flax, sesame, coconut, castor, copra, etc.

Almost 50% of the global food protein supply comes from cereal seeds. Soybean, peanut, common bean, pea, lupine, chickpea, faba bean, lentil, grass pea, cowpea, pigeon pea, etc. are currently the most important legumes for human consumption and animal feed. Because of the edible contents of their seeds; grain legumes, cereals, and other minor crops etc. are edible seeds growing for plant protein for food and feed.

The Congress is intended that the subjects to be kept broad in order to provide opportunity to the science and research community to present their works as oral or poster presentations. The Congress languages will be in English.

Researchers, breeders and others with an interest in the genetics and breeding of oil and protein crops are invited to participate. Among the topics to be discussed are directions of breeding for resistance to abiotic and biotic stresses, improved industrial use, and conventional versus organic production.

As there have been many different scientific meetings around the world, we aimed to bring three different communities together, namely science, research and private investment groups considering practical information sharing that will be of value for breeders, seed enterprises, researchers and scientists, in a friendly environment of Antalya, Turkey to share their knowledge and experience and benefit from each other.

The congress will gather scientists from around the world, and present their recent achievements. The organizers will also invite relevant stakeholders to provide a view on the current situation around the world as well as prospects to overcome the limitation for sustainable crop production to feed the world.

The first meeting has been organized in Lviv, Ukraine in 2019 by Trakya University, with part of more than 100 participants from all over the world with 70 scientific papers. The 2nd congress will gather scientists from around the world, and present their recent achievements.

There are 16 orals and 10 poster presentation in the congress both joining and presenting normal and online from different countries from the world.

With care for our nature and environment, we aim the green congress, meaning that as little as possible papers will be used. Abstract book is published in electronic book and is distributed to the participants by e mail for online participants. All the e-posters are prepared in electronic form and then submit to via the congress e mail and exhibited in electronical poster boards as well as in online e poster hall in our web page during the congress.

We would like to thank all of you for joining this congress and we would like to give also special thanks to our sponsors and collaborators for giving us a big support to organize this event.

Prof Dr Yalcin KAYA
Head of the Organizing Committee

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Prof Dr Nedim MUTLU, Akdeniz University, Turkey "Plant Breeding at the era of Molecular markers and CRISPR"

Asst Prof Dr Sobia KANWAL, Allama Iqbal Open University, Pakistan "Overview of Plant Based Nano Medicines"

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CONTENTS

WELCOME NOTES 3

ORGANIZING COMMITTEE 4

SCIENTIFIC COMMITTEE 5

THE EFFECTS OF COCOA BUTTER REFINING ON THE PROBIOTIC MILK CHOCOLATE MANUFACTURING 8

ANTIOXIDANT TRITERPENOIDS IN TABLE OLIVES: MASLINIC ACID AND OLEANOLIC ACID 9

BIOMASS LIPID PROFILES OF SPIRULINA MICROALGAE AS FOOD SUPPLEMENT .. 10

FAST AND fUTURISTIC: sPEED BREEDING FOR REDUCING GENERATION TIME IN CANOLA, RAPESEED AND MUSTARD 11

CHEMICAL COMPOSITION AND ANTIBACTERIAL ACTIVITY OF THE ESSENTIAL OIL OF ALGERIAN MENTHA PULEGIUM 12

FORMULATION OF A NANO-EMULGEL MINERAL WATER/CURCUMIN/ALMOND OIL: CHARACTERISATION AND EVALUATION OF THERAPEUTIC ACTIVITIES 13

MORPHO-PHYSIOLOGICAL RESPONSES OF CICER ARIETINUM GENOTYPES UNDER WATER STRESS 14

IN VITRO ANTIOXIDANT AND SUNSCREEN ACTIVITY OF ACETONE AND METHANOL EXTRACTS OF MAIZE LEAVES AND MAIZE TASSEL 15

INVESTIGATION OF TIME-DEPENDENT ALTERATIONS IN PHOTOSYNTHETIC ACTIVITY INDUCED BY PEG-INDUCED DROUGHT STRESS 16

INFLUENCE OF OROBANCHE CUMANA WALLR. ON DEVELOPMENT OF SUNFLOWER GENOTYPES WITH DIFFERENT LEVEL OF RESISTANCE 17

INVESTIGATION OF CHANGES IN GERMINATION AND SEEDLING CHARACTERISTICS OF SOYBEAN SEEDS WITH DIFFERENT PACKAGING MATERIAL AND STORAGE PERIOD 18

IS THERE DIFFERENCE BETWEEN POPULATIONS IN RESPECT TO THE SEED MORPHOMETRIC CHARACTERISTICS? 19

ECOLOGICAL STUDY OF SAFFLOWER IN RUSSIA, KAZAKHSTAN AND TAJIKISTAN TO ENSURE FOOD SECURITY 20

INVESTIGATION OF WEED SPECIES, DENSITY AND FREQUENCY IN CANOLA(BRASSICA NAPUS OLEIFERA) PRODUCTION AREAS OF TEKIRDAG PROVINCE 21

ISOLATION AND IDENTIFICATION OF THE CAUSAL AGENT OF OLIVE ANTHRACNOSE DISEASE IN THE MARRAKECH-SAFI REGION OF MOROCCO 22

DIGESTIVE AND METABOLIC USE OF SOYBEAN MEAL PROTEINS IN HEAT-STRESSED ROOSTERS 23

CHEMICAL COMPOSITION AND NUTRITIONAL VALUE OF CORK OAK ACORN (QUERCUS SUBER) FOR GROWING RABBITS 24

HYSSOPUS OFFICINALIS L GASTROPROTECTIVE AND ANTIOXIDANT EFFICACY .. 25

FROM STRESS TO SUCCESS: HOW SELENIUM NANOPARTICLES ENHANCE PLANT RESILIENCE AND OIL BIOACTIVES IN SESAME UNDER BIOTIC STRESS. 26

INCREASING THE YIELD OF COLD PRESSED POMEGRANATE SEED OIL BY ACID+ENZYME PRETREATMENT 27

FLAXSEED'S IMPACT ON GUT MICROBIOME : FROM TRADITIONAL USE TO MOveri RESEARCH. 28

EDIBOIL 2024 CONGRESS STUDENT ORGANIZING TEAM 29

OUR SPONSORS 30

THE EFFECTS OF COCOA BUTTER REFINING ON THE PROBIOTIC MILK CHOCOLATE MANUFACTURING

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ABSTRACT

Cocoa butter (CB) gives the continuous phase of chocolate that has a major influence on the final chocolate product quality, due to the CB has an optimal quality for chocolate shelf life. It is stated that CB should contain less than 1.75% free fatty acids (FFA, based on oleic acid) to be in compliance with the European Union Directive and needs to be free from off-flavors, molds and rancidity. Suitable flexible refining technologies are needed because as first step, a global decrease in CB quality is noticed (high level of FFA, more phosphorus and more alkalinity); as second steo, there is also an increased industry's demand for different types of CBs (like color, neutral flavors degree, melting profiles). The conventional CB refining processing exists of a filtration followed by a batch or continuous deodorization. Probiotic bacteria are healthfull for human by improving the gutmicro biota balance and the defenses against pathogenic flora and beneficial for immune system, blood cholesterol reduction, vitamin synthesis. The fortification of lactobacillus to planned chocolates creates a tastier option for transferring these Lactobacillus and Bifido bacterium to the stomach for the betterment of the microbial environment of the gut. In this research, Bifido bacterium was fortificate into the milk chocolate for the preparation of probiotic milk chocolate and a crude cocoa butter with or without a silica pretreatment, was subjected to a steam refining in a packed column at four temperatures: 150, 200 and 250 °C. Then the impact of the refining treatments on the physicochemical quality of probiotic milk chocolate was evaluated; in the another step, the refined CBs were utilized to manufacture the probiotic milk chocolate. Various quality properties as particle size distribution (PSD), rheological behavior and texture were then determined to assess the cocoa butter refining treatment effect.

Keywords: Cocoa butter, refining, probiotic, Bifidobacteria, milk chocolate.

ANTIOXIDANT TRITERPENOIDS IN TABLE OLIVES: MASLINIC ACID AND OLEANOLIC ACID

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ABSTRACT

The epicarp part of the olive fruit (O. europaea L.) contains triterpenes including oleanolic acid, maslinic acid, uvaol and erythrodiol. It is stated that maslinic acid and oleanilic acid are triterpenoids that are predominantly found as the main triterpenes. Various biological activities of triterpenoids, such as antioxidant, anti-inflammatory and antitumoral are reported. It is reported that the average amount of triterpenes consumed per person is 400 mg/kg/day, owing to the fact that the diet in Mediterranean countries is dominated by olive oil. In our study, which was carried out to shed light on the determination of triterpenic acid levels in olives, a frequently consumed breakfast food product and special food in our country, we examined the raw and medium-sized olives of homogeneous caliber (201-230 grains/kg) obtained from three olive gardens in Manisa-Akhisar and Aydın-Kuyucak regions. After processing, maslinic acid and oleanolic acid levels were determined. The dry matter content was determined as 35.56% DM in Akhisar Domat olives and 38.83% DM in Kuyucak Yamalak Kabası olives, and the maslinic acid content in raw olive samples was 1.123 mg/g DM (average) in Akhisar Domat olives and Kuyucak Yamalak Kabası olives, respectively. It was determined as 0.678 mg/g DM ($p < 0.05$). In olives sweetened after Spanish processing, it was determined as 0.082 mg/g DM (average) and 0.066 mg/g DM, respectively. While oleanolic acid levels were determined as 0.402 mg/g DM (mean) and 0.272 mg/g DM in raw Akhisar Domat olives and Kuyucak Yamalak Kabası olives, respectively, it was not detected in processed Akhisar and Kuyucak samples ($p < 0.05$). In this context, approximately 0.99-1.23 mg of maslinic acid can be consumed by consuming 5 table olives (approximately 15 g) per day.

Key Words: Olive, Maslinic Acid, Oleanolic Acid, Quality

BIOMASS LIPID PROFILES OF SPIRULINA MICROALGAE AS FOOD SUPPLEMENT

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ABSTRACT

Nutritional composition was determined for special cultivated Spirulina platensis and mentioned Thirteen strains of these microalgae were obtained as a percentage of total fat. Total PUFA, SFA contents, n3/n-6 ratios, and eicosapentaenoic acid (EPA)/docosahexaenoic acid (DHA) ratios were obtained. *Spirulina* samples contained 7.53% of average total lipid ($p < 0.01$). Special Spirulina was detected as a rich source of alpha linoleic acid (C18:2n-6) (ALA) and gamma-linolenic acid (C18:3n-6) (GLA) and were 15.03% 0.74%, respectively. Besides, the level of arachidonic acid (C20:4*n*-6) of *Spirulina* was 0.45% of the fatty acids whereas docosapentaenoic acid (DHA) (C22:5*n*-3) level was high and was in the range of 3.56%. This special cultivated microalgae could be an important food additive. It can be used in salads, soups, and dip foods in food sector and has been utilizated in infant formulas, popcorn, spice mixtures, fruit juice mix, potato chips, smoothies made with apples and blueberries, dilled beans, macaroni, and avocado dressing.

Keywords: Microalgae, Spirulina, proximate composition, fatty acids, GC, Gas Chromatography

FAST AND fUTURISTIC: sPEED BREEDING FOR REDUCING GENERATION TIME IN CANOLA, RAPESEED AND MUSTARD

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ABSTRACT

Pakistan's oilseed production struggles to meet demand due to outdated crop varieties. Traditional breeding methods take 15 years to develop a new variety, but erratic climate change requires faster development of resilient strains.Under field conditions, round the year temperature profile supports only one generation per year.Speed Breeding (SB) being modern approach, was used for the first time in Pakistan for generation advancement of rapeseed and mustard lines at NARC, Islamabad to determine time span for the completion of seed to seed cycle in canola, rapeseed and mustard during 2023 and to develop protocol of speed breeding system for these crop. In green house, Heliospectra LED grow lights were used for managing the photoperiod. The temperature was set at 22°C during the day and 17°C at night, with 50%-70% humidity. Seeds were planted in plastic pots filled with peat moss for rapid root development. Data on flowering, maturity, height, branches, pods, seeds, and weight were recorded. Comparative study revealed that rapeseed plants completed seed to seed cycle in 85 days in SB whereas in 184 days in field conditions with 53% reduced generation time and mustard plants completed seed to seed cycle in 75 days in SB whereas in 177 days in field conditions with 55% reduced generation time. The results revealed that under SB four generations of canola, rapeseed and mustard can be grown in one year. This technique can be successfully employed to develop climatic resilient high yielding varieties in 7-8 years if marker assisted selection is employed in two generations (May to September) followed by its testing in the field conditions (October to April) to determine the best yielding advance lines. The same procedure will be repeated in next year to get high yielding stable lines. In this way the indigenous edible oil production will be increase and will help to reduce the import bill of edible oil of the country.

Keywords: Speed breeding, protocol, canola, rapeseed & mustard; expedite research, variety development, climatic resilient lines/varieties, marker assisted selection, Pakistan

CHEMICAL COMPOSITION AND ANTIBACTERIAL ACTIVITY OF THE ESSENTIAL OIL OF ALGERIAN MENTHA PULEGIUM

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ABSTRACT

In recent years, significant research has been conducted on bioactive molecules of plant origin. Medicinal and aromatic plants, in particular, represent a natural wealth that provides an opportunity for discovering substances that could serve as substitutes for synthetic molecules due to their absence of certain side effects. This is exemplified by pennyroyal mint (Mentha pulegium), known by its Arabic vernacular name "fliou," belonging to the Lamiaceae family. This species grows wild, predominantly in the majority of Mediterranean countries. The essential oil extracted by hydrodistillation from the aerial parts of pennyroyal mint, harvested in Guelma region (Eastern Algeria) and dried, yielded 2.69%.
The extract was analyzed using Gas Chromatography with Flame Ionization Detection (GC-FID) and Gas Chromatography with Mass Spectrometry (GC-MS). The chromatographic profile detected 99.57% components, with piperitone being the major constituent (65%).
The determination of antibacterial activity was conducted using the disc diffusion method on agar. Results indicate that the essential oil exhibits inhibitory action against the tested bacteria, including 2 Gram-negative strains: Escherichia coli ATCC 25922 and Klebsiella pneumoniae ATCC 700603, and 2 Gram-positive strains: Staphylococcus aureus ATCC 25923 and Enterococcus faecalis ATCC 29212.
The sensitivity of bacterial strains to Mentha pulegium essential oil suggests its potential therapeutic use as natural alternatives to chemotherapeutic agents, especially as the spectrum of action of these agents continues to narrow.

Keywords: Mentha pulegium, essential oil, CPG/SM, antibacterial activity.

FORMULATION OF A NANO-EMULGEL MINERAL WATER/CURCUMIN/ALMOND OIL: CHARACTERISATION AND EVALUATION OF THERAPEUTIC ACTIVITIES

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ABSTRACT

Curcumin is a bioactive hydrophobic molecule is currently highlighted because of their nutritional and functional properties.Unsatisfactory pharmacokinetics are often observed for this molecule because of its low aqueous solubility. Our goal is to formulate a nanoemulgel based on nano-curcumin to increase their blood concentration. The formulated product has been characterized by physicochemical methods. The solubility was improved, the emulsion gel presented a creamy, homogeneous and viscous appearance with a yellow color and a neutral pH (5-6). The microscopic emulsion analysis offers a monodisperse and stable system. The biopharmaceutical study showed progressive release kinetics in the dissolution physiological medium: nanocurcumin is released at a rate of 85% after 5 hours using in vitro diffusion per Franz cell. In addition, our formulation presents very interesting biological activities. A very interesting anti-inflammatory activity with a maximum inhibition of albumin denaturation that reaches 98% at a concentration of 2000 µg/ ml. An excellent antioxidant activity determined by the dosage of polyphenols with DPPH, with a percentage inhibition of 97.6%. An antibacterial effect has been proven against five bacterial strains.

Keywords: nanoemulgel, nanoparticles, bioavailability, curcumin, sweet almond oil, mineral water, biological activities.

MORPHO-PHYSIOLOGICAL RESPONSES OF CICER ARIETINUM GENOTYPES UNDER WATER STRESS

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ABSTRACT

Tolerance to water stress is a complex trait that involves numerous morphological, physiological and biochemical responses. Understanding these mechanisms is essential to develop genotypes tolerant to water stress. Four chickpea genotypes (Sidi Mimoun, CCLS, ILC-482, Rajat) of different origins were grown in semi-controlled conditions to study the influence of water rationing treatments (T1: 100 and T2: 25 % of capacity retention) after one month of vegetation on the length of the stem and the root and their ratio, the number of root branches, the fresh and dry weight of the root and stem, leaf RWC and chlorophyll levels were recorded 45 days after sowing. The morpho-physiological results of Cicer arietinum plants showed a significant effect of water stress in the four genotypes. However, the chlorophyll level increased in Sidi Mimoun and Rajat due to water stress.

Keywords: Cicer arietinum genotypes, Morphology, Chlorophyll, RWC, Water stress.

IN VITRO ANTIOXIDANT AND SUNSCREEN ACTIVITY OF ACETONE AND METHANOL EXTRACTS OF MAIZE LEAVES AND MAIZE TASSEL

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ABSTRACT

The cosmetics industry is one of the fastest growing sectors globally, with a volume and revenue of USD 100.49 billion worldwide. At the global level, it is projected to register a CAGR of approximately 5.5% from 2021 to 2028. Especially sunscreen products have a large share in this market volume. Sunscreen products protect the skin from the damages caused by UV rays from the sun by protecting the skin. Although chemicals such as oxybenzone, titanium dioxide, etc. in sunscreen products protect the skin from harmful rays from the sun, long-term use causes some damage to human health. For this reason, the interest in organic and natural sunscreens is increasing every year. In this perspective, the discovery of raw materials with natural ingredients is gaining importance. Especially the discovery of effective products obtained from plant wastes is economically and sustainably important. In this study, in vitro total antioxidant activity (DPPH) and sunscreen activities (SPF) of acetone and methanol extracts of maize leaves and maize tassel collected from Bursa were calculated. In this study, 1 mg/ml acetone and methanol extracts of maize leaves had DPPH inhibition activity of 52.85 + 1.28% and 64.27 + 1.53%, while maize tassel had 49.51 + 1.02% and 53.14 + 1.17% activity, respectively. When in vitro sun protection activities were analysed, it was observed that acetone and methanol had 14.10 + 0.15 and 29.06 + 0.20 % activity, respectively. Maize tassel acetone extract was found to be 13.06 + 0.04 and methanol extract was found to be 26.14 + 0.07. In conclusion, it is thought that plant parts whose leaves and tassels are not used as food have a potential antioxidant and sunscreen activity and can be used as sunscreen products in the cosmetics sector in terms of being economical and sustainable.

Keywords: Antioxidant, Sunscreen, Cosmetic, Maize leaves, Maize tassel

INVESTIGATION OF TIME-DEPENDENT ALTERATIONS IN PHOTOSYNTHETIC ACTIVITY INDUCED BY PEG-INDUCED DROUGHT STRESS

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ABSTRACT

Plants are often exposed to abiotic stresses such as drought which is one of the main environmental stresses that limits plant growth and development in the worldwide. This study was conducted to elucidate the time-dependent effects of increasing drought severity on safflower culture at the early vegetative stage using photosynthetic performance indexes (PIABS and PITOT). Additionally, the changes caused by drought at the end of the treatment in some morpho-physiological parameters.and polyphasic chlorophyll α fluorescence kinetics were examined. Safflower cultivar (Carthamus tinctorius L., Olas) was grown in controlled growth room for 18 days and then plants were exposed to increasing severity of PEG-induced drought treatment (0.05, 0.1, 0.2, 0.3 and 0.4 MPa PEG 6000) for 7 days. Measurements taken every other day represented a significant reduction in the photosynthetic performance indexes in safflower depending on the duration and severity of drought. It was observed that from the third day onwards, the effect became more pronounced in PITOT, which is an indicator of the overall functional activity of photosystems and the intersystem electron transport chain, across all levels of drought severity. On the 7th day of drought, all phases of the OJIP curve were negatively affected in safflower. Also, this decrease in photosynthetic activity was accompanied by a reduction in the shoot and root length, leaf area, leaf and root relative water content (RWC) and total chlorophyll content. In contrast, leaf and root ion leakage rates increased substantially. All obtained findings indicated that drought limited water uptake in safflower culture, adversely affecting photosynthetic mechanisms and membrane functionality, and constraining growth.

Keywords: Safflower, time-dependent changes in drought, photosynthetic performance indexes, morpho-physiological traits

INFLUENCE OF OROBANCHE CUMANA WALLR. ON DEVELOPMENT OF SUNFLOWER GENOTYPES WITH DIFFERENT LEVEL OF RESISTANCE

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ABSTRACT

INFLUENCE OF Orobanche cumana Wallr. ON DEVELOPMENT OF SUNFLOWER GENOTYPES WITH DIFFERENT LEVEL OF RESISTANCE Duca M., Clapco S., Mutu A., Martea R. Center of Functional Genetics, Moldova State University **.**The obligate root parasite Orobanche cumana withdraw carbohydrates, nutrients, and water from the host causing important economic damage in sunflower production (Helianthus annuus) in many countries. Research has demonstrated that broomrape induces substantial damage through alterations in various parameters such as host plant height, root length, biomass accumulation, and biomass partitioning. These changes occur as resources that would otherwise contribute to host biomass are redirected to support the growth and reproduction of the parasite. The impact of O. cumana is influenced by both the genotype of the host plant and the virulence of the broomrape parasite. In this context, the effect of a broomrape population with moderate aggressivity on some sunflower genotypes with different levels of resistance or susceptibility to the parasite was analyzed. The experiments were performed under controlled conditions using the susceptible sunflower hybrid Performer and five genotypes carrying resistance genes to different broomrape races, as follow: LC1002A and LC1003A – resistant to race D and E; the hybrid Favorit – resistant to race F; LG-5542 and PR64LE20 – resistant to race G. The incidence of parasite ranged between 61.5-71.4%, with average numbers of attachments per plant between 2.25-3.0 and attack rate 1.4-2.14, on susceptible hybrid Performer and lines LC 1002A and LC 1003A, respectively. The highest infestation level was recorded in the susceptible genotype. In the case of Favorit hybrid the attack severity level was very low (attack rate – 0.2) and no significant differences were observed between infested and non-infested samples. The maximum fresh weight of parasites shoots and tubercles emerged per host plant (4.1 g) were revealed in the susceptible genotype, with the average of 3.3 g. The differences between weight of broomrape emerged on lines LC 1002A and LC 1003A weren't significant. Broomrape infestation leads to a reduction (about 7.3-11.9%) in host plant height and root length in all infested genotypes compared to non-infested controls and to a reduction in host`s biomass accumulation. The total pathosystem mass (host total biomass + parasite) was 22% and, respectively, 11% lower in infested Performer and LC 1002A genotypes than in non-infested. The most affected was the accumulation of aerial biomass, which decreased by 16.1 and 10.5 % in lines LC 1002A and LC 1003A, respectively, and by 27.2% in Performer. High negative correlations were observed between biomass accumulation (both root and shoot weight) and broomrape fresh weight accumulated per host plant (r=-0.55…-0.77). It has established that the negative impact of broomrape is less significative in resistant genotypes.
Keywords: sunflower, broomrape, biomass, biomass distribution, attack intensity.
Acknowledgments: This study was supported by the subprogramme 011101 Genetic and biotechnological approaches to the management of agroecosystems in the conditions of climate change, funded by the Ministry of Education and Research.
Investigation of Changes in Germination and Seedling Characteristics of Soybean Seeds with

INVESTIGATION OF CHANGES IN GERMINATION AND SEEDLING CHARACTERISTICS OF SOYBEAN SEEDS WITH DIFFERENT PACKAGING MATERIAL AND STORAGE PERIOD

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ABSTRACT

Soybean seed quality is affected by pre- and post-harvest periods. Especially germination parameters are affected by post-harvest conditions and generally decrease until sowing time. In this study, changes in seed viability and seedling characteristics of soybean seeds stored in different packaging materials were investigated during storage. Soybean seeds were stored at room temperature (24oC±1) in plastic containers, plastic bags, glass jars, airless packages, paper bags and cloth bags for 12 months. At 2-month intervals, some germination and seedling characteristics of soybean seeds were examined. Germination rate, germination index, average germination time, vigor index, dry matter content, sprout and root lengths of soybean seeds decreased with increasing storage period. The decrease in germination and seedling characteristics of soybean seeds during storage increased especially after the sixth month of storage. According to the packaging materials, the least decrease in germination and seedling characteristics of soybean seeds was determined in glass jars and airless packages, while the highest decrease occurred in seeds stored in plastic containers and bags. In the study, it was determined that packaging materials are very important for soybean seeds to be stored without losing their viability. Considering the characteristics examined in the study, it was determined that soybean seeds can be stored in glass jars and airless packages with high quality.

Keywords: Soybean, packing materials, storage period, seed vigor

IS THERE DIFFERENCE BETWEEN POPULATIONS IN RESPECT TO THE SEED MORPHOMETRIC CHARACTERISTICS?

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ABSTRACT

Alien plant invasions affect the diversity and stability of the local community. The EU Biodiversity Strategy for 2030 has set the challenge of controlling invasive aliens that have already become widespread. The first target of invasive alien species regulation is the most aggressive invaders. Small balsam (Impatiens parviflora, Balsaminaceae) could be classified in this category as alien species that is extremely penetrative into forest ecosystems. For some cases eradication measures might be related to some type of use of the plant. Impatiens parviflora is producing edible seeds. Numerous investigations were focused on I. parviflora geographical, ecological properties of populations, although seed characteristics have been poorly investigated. In addition, most of the studies of I. parviflora were concentrated to Central and West Europe, but data about Baltic region populations remain much scarcer. Eradication of invaders might be related to some type of use. In Lithuania, I. parviflora is growing in wide range of soils, and is distributed in zones, which differ in climate parameters. The objective of our study was to perform morphometric study of invasive in Lithuania populations of I. parviflora. Sixteen populations of the species were collected along the territory of Lithuania. Sampling took place in July 29 – August 3. In each site seeds were taken from 10 individuals using the main stem with the most ripen boxes. Seeds were evaluated according to length, width, length-width ratio, area and perimeter. Between populations the seed area varied 1.38 times, perimeter – 1.18, length – 1.99, width – 2.37. All estimated parameters of the seeds were significantly interrelated, with the biggest correlation between perimeter and area ($r = 0.936$, $p < 0.01$). In conclusion, morphological parameters together with the other data might be helpfull tool discriminating populations.

Keywords: IAS, invasive alien plants, Impatiens, seed morphology

ECOLOGICAL STUDY OF SAFFLOWER IN RUSSIA, KAZAKHSTAN AND TAJIKISTAN TO ENSURE FOOD SECURITY

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ABSTRACT

Safflower oilseed is a crop native to Egypt and India with arid climates. Global warming in the world requires an alternative approach to well-known oilseeds (sunflower, rapeseed). Many years of research have been carried out to study the culture of safflower oilseed in contrasting natural conditions Russia, Southern Kazakhstan, and Tajikistan. The goal was to study the biological characteristics, productivity, accumulation of oil content, and the manifestation of the main disease in arid conditions and to create a variety with adaptive potential for a specific region. Based on the research results, new varieties of safflower oilseed Krasa Stupinskaya (Russia), Akmai, Nurlan, Iirkas, and Moldir-2008 (Kazakhstan), Shifo (Tajikistan) were created and recommended for sustainable farming in the above regions. In terms of the accumulation of oil and fatty acid composition in the seeds, the Krasa Stupinskaya variety from the Central region of the Russian Federation is at the level of southern varieties from Kazakhstan and Tajikistan, 30.9% in the Central region of Russia and 34.3% in Tajikistan. The variety Krasa Stupinskaya has an oil yield of 240 kg/ha in Russia with a seed yield of 0.8 t/ha, in Central Tajikistan, the oil yield averaged 940 kg/ha with a seed yield of 1.7 t/ha. In a warming climate, the above varieties will ensure food security in their countries due to stable yields, sufficient accumulation of oil content in seeds and disease resistance.

Keywords: Safflower oilseed, drought conditions, contrasting ecological regions, global climate warming, variety, food security

INVESTIGATION OF WEED SPECIES, DENSITY AND FREQUENCY IN CANOLA(BRASSICA NAPUS OLEIFERA) PRODUCTION AREAS OF TEKIRDAG PROVINCE

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ABSTRACT

Canola ranks fifth after maize, palm, soybean and cottonseed among the plants from which oil is produced in the world, and it ranks sixth after sunflower, cotton, soybean, peanut and sesame in oilseed production in Turkey. In 2021, 140 000 tons of canola was produced from 376 017 decares of cultivation area in Turkey. While 94 308 tons of canola was imported to meet the consumption in Turkey in 2000, this figure became 25 807 tons in 20. As of 2020, Turkey's canola production amount (121 542 ton) was above the domestic consumption amount (105 059 ton). Trakya region has provided to 34% of canola production in Turkey. The aim of this study is to investigate the situation of canola production, which has high quality and high yield oil seed in the Trakya region. For this purpose, we used gross profit analysis. Variable costs and other data of canola production were collected by surveys from 100 canola producers in the Trakya region. There calculated net profit with relative unit cost for important products such as wheat, sunflower and canola in the Trakya region. It was found that net profit of canola per decar is higher than other products with TL137,50. While annual canola production in the world is calculated as approximately 71.5 million tons, production in Turkey was 122 thousand tons in 2022. The country's canola production amounted to an average of 115 000 tons in the last 10 years. Tekirdağ ranked first with approximately 38 thousand tons of canola production last year. This province was followed by Edirne with 24 thousand tons and Konya with 16 thousand tons. This study was conducted to determine the weed species, densities and frequency of occurence in canola cultivation are as of Tekirdağ province in April-May 2019. For this purpose, in a total of 30 fields in 11 districts, a survey was conducted . As a result of there search, 20 weed species in cluding 6 families were determined. Anthemis spp. (1,09 plants/m2), Avena fatua L. (0,60 plants/m2, Sinapis arvensis L. (0,59 plants/m2), Papaver rhoeas L. (0,54 plants/m2), Lolium temulentum (0,45 plants/m2), Convolvulus arvensis L. (0,43 plants/m2), Agropyron repens L. (0,37 plants/m2), , Bifora radians L. (0,22 planti/m2), Myagrum perfuliatum L.. (0,18 bitki/m2), Bromus tectorum L. (0,16 bitki/m2) species were determined as the most intense 10 species in the province The most prevalent weed species according to frequency of occurrence were Anthemis spp. (% 96), Sinapis arvensis L. (% 73), Avena fatula L. (% 73), Papaver rhoeas L. (% 64), Lolium temulentum (% 61), Convolvulus arvensis L. (% 51), Agropyron repens L. (% 41), Capsella bursa-pastoris L. (% 26) ve Sonchus arvensis L.. (% 25)

Keywords: Weed, canola, density, frequency, Tekirdag

ISOLATION AND IDENTIFICATION OF THE CAUSAL AGENT OF OLIVE ANTHRACNOSE DISEASE IN THE MARRAKECH-SAFI REGION OF MOROCCO

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ABSTRACT

The olive tree (Olea europaea) is a fruit tree belonging to the Oleaceae family, primarily cultivated for its olives. It represents a traditional crop of great agronomic, economic, and cultural significance in the Mediterranean basin. However, this crop is vulnerable to various fungal pathogens that affect its health, yield, and oil quality. Anthracnose, caused by Colletotrichum spp., is a widespread disease of olive trees in most olive-growing regions worldwide, leading to both pre- and post-harvest issues. This study aims to evaluate the significance of fungal diseases in Moroccan regions and to identify pathogenic strains, given that these diseases are often treated with chemical fungicides, and biological alternatives are needed. Surveys were conducted in the Marrakech-Safi and Fès-Meknes regions, where olive leaf samples were collected from 20 different sites. The pathogen was isolated from a sample from the Marrakech-Safi region, and its pathogenicity was confirmed on olive fruits. The isolated cultures were identified both macroscopically and microscopically, and the results clearly confirmed the pathogenicity of the isolated strain. Pathogenicity tests on fruits showed that the infection rate reached 100% by the fifth day, and re-isolation and microscopic examination validated the pathogenicity of the strain.

Keywords: Olea europaea, Colletotrichum spp., anthracnose, Morocco.

DIGESTIVE AND METABOLIC USE OF SOYBEAN MEAL PROTEINS IN HEAT-STRESSED ROOSTERS

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ABSTRACT

The aim of our work was to determine the chemical composition of soybean meal and the digestive and metabolic utilisation of its proteins in two-year-old local farmyard roosters. The animals were subjected to ambient temperatures of 22.9±0.39°C (Test 1) and elevated temperatures of around 30.71±0.27°C (Test 2). The classical method of digestive balances followed by total collection of excreta was adopted. The results showed that the chemical composition of the soybean meal was conventional, with the exception of its protein content, which was low (42.65% DM) compared to the values **related by the literature**. The apparent digestibility coefficient (ADC) : 90.66 ± 1.55% and the true digestibility coefficient (TDC) : 91.08 ± 1.49% values for trial 2 are significantly lower ($P<0.05$) compared with ADC : 92.20 ± 1.41% and TDC : 92.67 ± 1.42% in trial1. Nitrogen retention of roosters in trials 1 and 2 differed significantly ($P<0.05$), being 19.36 ± 4.90 and 29.48 ± 16.19% respectively. These results indicate that heat has an effect on the digestibility and metabolic utilisation of soybean meal proteins. Poultry feed manufacturers should take into account the effects of heat on nutrient utilisation in order to reduce feed costs, optimise their nutritional potential and reduce nitrogen waste.

Keywords: Heat, cockerel, digestibility, metabolic utilisation, proteins, soybean meal.

CHEMICAL COMPOSITION AND NUTRITIONAL VALUE OF CORK OAK ACORN (QUERCUS SUBER) FOR GROWING RABBITS

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ABSTRACT

Considering that feed expenses account for up to 70% of the overall costs in rabbit farming, the use of imported components in the formulation of rabbit diets results in elevated feed prices, and subsequently, an increased cost price of rabbit meat. The use of local raw materials can be an interesting alternative. Among local ingredients, the cork oak acorn (Quercus suber) is abundant and underutilised in conventional livestock farming. However, in order to use this raw material in rabbit feed formulation, it is essential to know its chemical composition and nutritional value. According, the objective of our study was to evaluate the nutritional value of cork oak acorn (Quercus suber). The acorn was incorporated into three diets at increasing levels (0%, 10%, and 20%) as a replacement for a basal diet. Three groups of 12 individually caged rabbits were fed one of the three diets ad libitum. The faecal digestibility of the feed was assessed between the ages of 46 and 49 days. The acorns, the feed used and the collected faeces were subjected to standard chemical analysis. The results showed that cork oak acorns have a high starch content (41% DM) and a significant fat content (6%DM), but a low protein content (5,8%DM).The digestible energy concentration of cork oak acorns, estimated by regression, was 14.67 ± 2.49 MJ /kg DM, with an energy digestibility of 77%. The digestible protein content was 56.54 g/kg DM, corresponding to a crude protein digestibility of 80%. Therefore, cork oak acorns can be considered as good energy source for growing rabbits.

Keywords: digestibility, growing rabbit, nutritive value, Quercus suber, acorn

HYSSOPUS OFFICINALIS L GASTROPROTECTIVE AND ANTIOXIDANT EFFICACY

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ABSTRACT

Hyssopus officinalis L. (Lamiaceae) is a medicinal plant known in Algeria as "Zufa". It is used for various purposes, including stomach disorders. The aim of this study is to evaluate the effect of the ŋ-butanol extract of the aerial parts of H. officinalis L. (ŋ-BuHs) in models of gastric damage in rats. The effect of ŋ-BuHs (250 and 500 mg/kg, 1 h before induction) was tested on ethanol induced gastric ulcers. Additionally, we tested the antioxidant effect of (ŋ-BuHs) in vitro. Pretreatment with (ŋ-BuHs) at 500 mg/kg and 250mg/kg reduced the relative area of gastric ulcers induced by ethanol ($p < 0.01$) and showed remarkable mucosal lesion improvement. The plant extract showed a great efficacy for decreasing gastric acidity. ŋ- BuHs expressed a significant capacity for scavenging DPPH free radicals (1,07±0,07µg/mL, P value ≤ 0.05). The phytochemical study showed an appreciable amount of phenols and flavonoids in the extract. The study observations candidate H. officinalis to be a potent gastroprotection agent.

Keywords: Gastric mucosa, Ethanol-induced gastric ulcer, Hyssopus officinalis L.., Antioxidnat ability.

FROM STRESS TO SUCCESS: HOW SELENIUM NANOPARTICLES ENHANCE PLANT RESILIENCE AND OIL BIOACTIVES IN SESAME UNDER BIOTIC STRESS.

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ABSTRACT

Vegetable oil consumption is expected to reach almost 200 billion kilograms by 2030 in the world and almost 2.97 million tons in Pakistan. A large quantity of edible oil is imported annually from other countries to fil the gap between local production and consumption. Compared to other edible oil crops such as soybean, rapeseed, peanut and olive, sesame has innately higher (55%) oil content, which makes it an excellent candidate to be considered to meet local edible oil production. Oil seed crops, especially sesame, are affected by various pathogens, which results in decreased oil production with low quality oil. Selenium nanoparticles (SeNPs) work synergistically, as it has antifungal activity along with improving plant growth. Different concentrations of SeNPs were used, on three different varieties of sesame (TS-5, TH-6, and Till-18). Plant growth and development were accelerated by SeNPs, which ultimately led to an increase in crop yield. Morphological parameters revealed that SeNPs resulted in a growth increase of 55.7% in root length, 48% increase in leaf number/plant, and 38% in stem diameter. Out of three sesame varieties, TS-5 seedlings treated with 40 mg/L SeNPs showed 96.7% germination and 53% SVI at 40 mg/L. Sesame varieties dramatically increased antioxidant capability using SeNPs, resulting in 147% increase in SOD and 140% increase in POD enzyme units in TH-6 and 76% elevation in CAT enzymes in TS-5 (mean ± S.E). GCMS analysis revealed that bioactive compound I, sesamin, sesamol, and tocopherol contents were increased along with enhanced production of different unsaturated fatty acids. Kegg pathway analysis and MSEA revealed that these compounds were mainly involved in biosynthesis of unsaturated fatty acids, suggesting that SeNPs have elicited the biosynthesis of unsaturated fatty acids such as oleic acid, linoleic acid, and α-linoleic acid. This study concluded that SeNPs (40 mg/L) have an excellent capability to be used for crop improvement along with better oil quality.

Keywords: Selenium nanoparticle, Sesame, Edible oil, crop improvement, biotic stress.

INCREASING THE YIELD OF COLD PRESSED POMEGRANATE SEED OIL BY ACID+ENZYME PRETREATMENT

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ABSTRACT

Seeds are the part of fruits and vegetables with the highest concentration of bioactive molecules. They are therefore important for reuse and valorization in the waste-to-food industry. Pomegranate seeds account for about 60% of the pomegranate juice industry with a volume of 3-6 million tons per year. 22% of the waste consists of kernels with shells. Processors in the seed oil industry demand the procedures that are cost-effective and also enhance oil recovery. The most preferred method of pomegranate seed oil extraction in terms of quality and bioactive properties is cold pressing. In this study, roasting, enzyme and acid treatments were applied to the seeds to increase the oil yield. In addition, the effects of the treatments on quality indexes of the oil were analyzed. Two different roasting temperatures (100-140 °C) and 1% acid+enzyme (citric acid+pectolytic enzyme mixture) pretreatments were applied. Separate and combined effects of roasting and acid+enzyme pretreatments were analyzed. All of the pretreatments increased the oil yield compared to the non-treated control sample, the highest yield was observed in the batch where roasting at 140 °C and acid+enzyme mixture were applied together (17.8%). Acid+enzyme pretreatment caused slight increase in free fatty acidity, yet the values remained below 0.7% oleic acid. Pretreatments showed slight increment also in the peroxide values compared to that of control samples, even so the highest value in this analysis was measured as 2.9 meqO2/kg. The lowest values for both the parameters (0.25% oleic acid, 0.23 meqO2/kg, respectively) were observed in the samples roasted at 100 °C.

Keywords: Pomegranate seed, Cold pressed oil, Citric acid, Pectolytic enzyme, Oil yield

FLAXSEED'S IMPACT ON GUT MICROBIOME : FROM TRADITIONAL USE TO MOveri RESEARCH.

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ABSTRACT

Flaxseed cultivation in Algeria, dating back to 1862, has traditional uses for digestive health. Given its agricultural advantages and potential nutritional benefits, flaxseed warrants further investigation. This study explores its nutritional properties, focusing on effects on gut microbiota. A literature review was conducted using PubMed with the following search formula: (("Flax"[Mesh])) AND "Gastrointestinal Microbiome"[Mesh]. Nearly 30 articles were identified and analyzed. A synthesis of the studies was conducted, and the major effects on the microbiome were extracted. The findings were then classified according to the nature of the compounds and their effects on the microbiome. Flaxseed components, particularly polysaccharides, demonstrated protective effects against metabolic syndrome and diet-induced obesity in mice, primarily through modulation of gut microbiota. α-Linolenic acid-rich flaxseed oil exhibited positive effects on polycystic ovary syndrome through the sex steroid hormones-microbiota-inflammation axis in rats. Flaxseed powder attenuated non-alcoholic steatohepatitis by modulating gut microbiota and bile acid metabolism. Additionally, flaxseed lignan alleviated paracetamol-induced hepatotoxicity associated with gut microbiota regulation. The combination of flaxseed with probiotics showed potential in improving health against enterotoxigenic E. coli. Flaxseed presents an excellent alternative for protecting and improving health by providing a beneficial effect on the gut microbiome. This food stands out due to its various properties, which are utilized in the agro-food industry as well as in the production of nutraceuticals. Further in-depth studies are needed to understand which specific molecules are involved and through what mechanism(s) they act.

Keywords: Flaxseed, Gut microbiota ,α-Linolenic acid, Polysaccharides, Lignans ,Obesity, Nutraceuticals.

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