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SIEAB 2017 INVITED SPEAKERS' ABSTRACTS

001

WHY AND HOW TO INITIATE A NEW JOURNAL?

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As scientists working in Algerian universities and institutions, we recognize the need for an academic journal in the field of nutrition and food science dealing with studies and research performed in North African and Mediterranean countries. In this lecture, several points will be highlighted on how and why to initiate a new academic journal. The North African Journal of Food and Nutrition Research will be presented as an example. Hoping that our journal will make a significant contribution to research in our community. What is a typical procedure for creating a respectful academic journal? What are the influential factors that lead to a successful journal? How to select and appoint journal editors? And how to assess articles submitted to journal, are the most important questions that will be discussed during the speech. Other elements such as hosting journals, indexing, and submission procedure will be debated too.

002

AVIAN BIODIVERSITY OF URBAN AND PERI-URBAN WETLANDS OF ALGERIA: BETWEEN POLLUTION AND PROTECTION

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Background: Algeria's geographical location contains a much-diversified wetland potential. The most well-known are underlain by more than 1000km of coastlines, such as the lakes and freshwater marshes of the eco-complexes of

El-Kala, Guerbes-Sanhadja and those of Oran. Around the big cities (Annaba, Lac des Oiseaux, Bejaïa, Setif, Réghaïa, and Oran) were born small water bodies that host very large numbers. These environments are considerably polluted. However, many avian species regularly nest at the point where hydro systems begin to compete with the large wetlands classified as Ramsar site such as Tonga Lake, Lake Oubeira, and Lac Mellah etc. **Aims and methods:** We propose in this study, to expose the state of play of these highly polluted urban and peri-urban wetlands and to value the diversity of these ecosystems (diversity of environments and inventory of waterbirds) while highlighting the balances avian populations (RS, H', E), the structure of the flagship species of these ecosystems: an inventory of the diversity of waterbirds, their phenology, their structure, the distribution and spatial-temporal patterns of distribution. **Results:** Recent work has shown the regular nesting of rare and even globally endangered species such as White-headed Duck *Oxyura leucocephala*, *Marmaroneta angustirostris* Marbled Teal, Purple Swamphen *Porphyrio porphyrio*, *Aythya nyroca*. In general, we easily count 17 families consisting of 64 to 79 bird species.

Keywords: urban and peri-urban wetlands, pollution, water quality, diversity, aquatic avifauna, breeding, wintering.

003

DIVERSITY AND OCCUPATION STRATEGY OF FOREST PESTS IN ALGERIA

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In the semi-arid areas, Aleppo pine is the favorable host plant for various pests. Several attacks were periodically caused by the pine processionary moth, *Thaumetopoea pityocampa*, which is considered as the main defoliator of

these trees, it may cause a total defoliation in the infested stands. Recently, in the Mediterranean area, this pest has expanded its range both in latitude and in elevation and it became a biological model for the study of climate change. The climatic variations that were recorded in the semi-arid regions influenced on the installation of various xylophagous groups, in particular, the bark beetles, which found a favorable condition for their development, also for the bark beetle, *Tomicus destruens* that adapted on this condition to be a major destructive pest in the recent decades in various pine forests in the region. Periodic outbreaks of Phyllophagous Lepidoptera in oak forests are of concern and constitute a permanent threat. *Lymantra dispar* and its competitors; *Ephesia nymphaea*, *Catocala nymphagoga*, also *Tortrix viridana* caused large defoliation in some years in cork and holm oak forests, while, the cork oak trees are also suffering from the invasion of *Euproctis chrysorrhoea* and *Orgyia trigotephras*. Attacks by xylophagous insects have recently increased in density in cork oak forests in the sub-humid area where located in the east and west of the country. The damage of Coleoptera *Cerambyx cerdo* and *Platypus cylindrus* has been observed in various oak forests that were declined significantly over the years. Each year, the glands undergo strong attacks of the *Cydia fagiglandana*, *Cydia splendana*, and *Curculio elephas*. Atlas cedar has not escaped the attacks of defoliators mainly in winter and summer processionary, *T. pityocampa*, *T. bonjeani*, and xylophagous insects especially bark beetles. The losses that were recorded during the last three decades in Belezma resulted in the behavior of these aggressive insects. In addition to defoliators and xylophages, the insect pests of cones, particularly *Megastigmus* and *Dioryctria* species, which have an important impact on the regeneration of *Cedrus atlantica*. In forest stand, insects are very sensitive to variations of the environmental conditions that influence on their distribution and their behavior. A significant correlation exists between the choice of the host and the various groups of insects. Many species share same area and same host plant in the forest stands, and their spatial and temporal dispersal likely depends on climatic factors, as well the fragility of the forest ecosystem that plays an important role in the expansion and multiplication of these pests, furthermore the competition between them changes of the forest stands may too affect the activity and dispersal of other various pests.

Keywords: Climatic variations, Insects, Forests, Algeria.

004

ANIMAL PRODUCTION: SITUATION AND BECOMING OF A SPECIALTY

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"Zootechnie" is the study of animal production. It is an applied science that allows implementing the knowledge of

several disciplines of fundamental science (biochemistry, microbiology, genetics, plant and animal biology, mathematics... etc.) in order to improve quantitatively and qualitatively animal productions. This discipline is taught in hundreds of universities, schools, institutes or training centers around the world and for more than a century in several cases. In Algeria, the teaching of this specialty of agronomic sciences began during the French colonization in some training centers, for the training of technicians and livestock agents, and at INA (current ENSA) of El-Harrach in Algiers for the training of engineers. After independence, the teaching of this discipline continued to be part of that of agronomic sciences. Today, in the LMD system, animal productions are taught in the form of licenses and masters, either in the prestigious colleges like the ENSA of Algiers and the ESAM of Mostaganem or in several universities over the country. With the accelerated development of livestock farming in Algeria and the inevitable rationalization of this activity, dictated by competition and consumers increasingly demanding in quality, the demand of the labor market in animal production specialists will rise.

Keywords: Animal husbandry, Breeding, Science, Agronomy, Training.

005

ASSESSMENT OF THE BIRD CONSERVATION OF THE GOURAYA NATIONAL PARK (BEJAIA, ALGERIA)

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In terms of biodiversity monitoring, birds can be of great help to the natural environment manager as they are considered among the best biological indicators of the changes and disturbances that this diversity of life can undergo. It is in this context that our approach, which aims to assess the conservation interest of birds present in the Gouraya National Park (northeastern Algeria), is included. The Gouraya National Park has 50 conservation species. The main habitats present in the GNP territory host 43 protected species in Algeria. Five (05) species appear on the red list of the I.U.C.N of which one (*Sylvia undata*) is not protected in Algeria. Two of the five have the status "Endangered" (White-headed duck and Egyptian vulture) while the other three have the status "Near-Threatened", namely the Ferruginous Duck, the *Sylvia undata* and the European Roller. With regard to endemic forms, eight species are noted in the park, including 2 endemic subspecies of the Maghreb and North Africa (*Periparus ater ledouci* and *Fringilla coelebs africana*, respectively). The main bird habitats in the territory of Gouraya National Park have 50 conservation species (36.43% of the total). The different evaluation methods used show that the high matorrals (19 species), the rocky zones (13 species) and the Mézaïa lake (11 species) host the largest number of

heritage species. While the wastelands, riparian forests and the marine environment welcome less.

Keywords: Animal husbandry, Breeding, Science, Agronomy, Training.

006

CELLULAR RESPONSE AND TOLERANCE OF THE PLANTS FOR THE METAL STRESS

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The pollution, whatever its nature and its origin, remains the most important factor that changes the nature and the composition of the terrestrial ecosystem, aquatic and sometimes irreversible. The contamination of soils due to agricultural activity, the spreading of sewage sludge and waste of industrial origin becomes today a worrying problem. In fact, soils near industrial sites undergo an accumulation of heavy metals, organic compounds, as well as sometimes of radioactive compounds. Heavy metals are found in low concentrations generally of the order of nanogram or the microgram per liter. These pollutants are generated by human activity that has a strong toxicological impact on plants, consumer products and humans. They are several and we can quote especially; arsenic, cadmium, lead, and mercury. Some metallic elements (micronutrients) such as zinc, copper, iron, and nickel are acting at low concentrations as micronutrients for plants but when they are in excess, they can inhibit the growth of the organisms. In fact, the most part of the living organisms concentrates pollutants in their tissues with often a phenomenon of amplification of biological pollutants along the trophic chains which increases the toxicological risks. For a remedy, some plants are capable of adsorbing metals in their roots and to translocate them to the leaves. Along the trophic chains which increase the toxicological risks. Therefore, the use of higher plants could be an effective technique to reduce the potential effect of pollutants, thus the effectiveness of a plant species in the phytoremediation will depend, in part, of its tolerance toward the pollutant (s). It is therefore essential today not only to better know the effects of these pollutants on living organisms but also to implement sustainable solutions, designed to restrict their risks.

Keywords: ETM., oxidative stress, plants hyper - accumulative, tolerance, phytoremediation.

SIEB 2017 ORAL COMMUNICATIONS ABSTRACTS

007

THE ASSESSMENT OF FAT SHEEP CONTAMINATION BY TWO ORGANOCHLORINE PESTICIDES (DDT, LINDANE) IN FOUR AREAS OF ALGERIA

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Background: The misuse of pesticides in agriculture during the 60s and 70s has generated significant obsolete stocks throughout the country (1731 tons of products, 197.3 tones are Persistent Organic Pollutants (POP's), including 191 tons made mainly with DDT (96.8%). Although pesticides use in agriculture is relatively small compared to developed countries, insecticides are still the most pesticide commonly used in Algeria. **Aim:** In order to assess sheep contamination by organochlorine pesticides particularly with DDT and lindane. **Methods:** a total of 51 samples of peri-nephritic fat was analyzed with the application of gas chromatography-mass spectrometry. Initially, we have studied the retention time of the two compounds and their mass spectra. Then the total of samples was analyzed using the technique of liquid-liquid extraction by using a mixture of two solvents hexane and acetonitrile and the adsorption chromatography on florisil deactivated at 2.5% in the cleanup. **Results:** Chromatographic analysis has shown the absence of DDT and lindane traces, therefore levels did not exceed the maximum residue limit recommended by Codex Alimentarius; 2 ppm for lindane and 5 ppm for DDT, The LOD is 8µg/kg. **Conclusion:** The contamination of sheep meat by the two organochlorine compounds especially lindane residue level is obviously lower comparing to levels obtained in 1985. This decrease is due mainly to their interdiction. This decrease is due mainly to their restriction since the signing of the Stockholm Convention (2001).

Keywords: pesticides, residues, DDT, Lindane, sheep fat, gas chromatography-mass spectrometry.

008

EVALUATION OF PHENOLIC COMPOUNDS AND ANTIOXIDANT ACTIVITIES OF FIG (*FICUS CARICA* L.) IN TUNISIA

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Background: Natural substances from fruits have taken advantage of multiple interests in the biotechnology industries both in food, cosmetic and pharmaceutical. Between these compounds are found much of secondary metabolites and natural antioxidants in fig fruits (*Ficus carica* L.). **Aims:** This is particularly the case of the phenolic compounds, which are the subject of our study. **Methods:** This work focuses on the fig fruit. It studies essentially at a comparative characterization of the real potentialities in terms of bioactive molecules (total polyphenols, total flavonoids, and total anthocyanins) by spectrophotometer. In addition, the antioxidant activities were determined by 2 methods; the ABTS (2, 2-azinobis (3-ethyl benzothiazoline-6-sulfonate) and the DPPH (1, 1-diphenyl-2-picrylhydrazyl radical) assays. **Results:** Phytochemical composition of the fig of 30 accessions were found to be very diverse. The total polyphenols, total flavonoids and total anthocyanins greatly varied in the range from 51.50 (*Bouholi*) to 100.23 (*Nasri*) mg gallic acid equivalents/ 100 fresh weight, 0.33 (*Bayoudhi1*) to 17.59 (*Soltani Ahmar*) mg quercetin equivalents/ 100 fresh weight, 1.61 (*Besbessi*) to 11.67 (*Zidi2*) mg/ 100 fresh weight. Antioxidant activities expressed higher values in the 30 local fig accessions. DPPH % inhibition and ABTS ranged from 11.3.6 (*Besbessi*) to 64.73 % (*Bouharrag*) and 38.50 (*Sawoudi5*) to 676.13 (*Nemri*), respectively. Antioxidant capacity was significantly correlated with the total flavonoids- ABTS ($r = 0.363$) and total anthocyanins-DPPH ($r = 0.363$). The result showed that darker accessions showed higher contents of phytochemicals compared to lighter colored accessions. **Conclusions:** It should be noted that fig production in Tunisia is about 30 000 t / year and the results of this work have allowed us to conclude that fig fruits are rich in phenolic substances and have very good antioxidant properties that may allow us to recommend them in industrial food, cosmetic and medicinal.

Keywords: *Ficus carica*, Cultivars, Fruits, Polyphenols, Anthocyanins, Antioxidant, DPPH, ABTS.

009

DIVERSITY, STRUCTURE, AND ORGANIZATION OF THE EPHEMEROPTERA POPULATION IN THE WATER STREAMS OF THE BELEZMA NATIONAL PARK (BATNA-NORTHEAST ALGERIA)

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Background: Ephemeroptera (benthic macroinvertebrates) account for a large amount of the biodiversity and are directly influenced by ecological conditions. Thus, they are used as bioindicators of water stream quality. **Aims:** The aim of this study is to enrich the knowledge of the biodiversity of Ephemeroptera communities in the Belezma

National Park water streams (Biosphere Reserve: Batna, northeastern Algeria) and to evaluate the health status of water streams. **Methods:** The analysis of the distribution modalities of the Ephemeroptera was based on a multiparametric approach combining physico-chemistry of water, substratum types, and biodiversity. We have prospected four water streams (W = Wadis): W. Hamla, W. Chaaba, W. Bouilef and W. El Ma. Five habitat types are considered: fine sand, coarse sand, pebbles, rocks, and vegetation. Ephemeroptera sampling was conducted in 2015 and 2017 in a total of 21 stations using a Surber. **Results:** The pH of water varies from 7.66 to 8.20, nitrates and nitrites appear only in traces. The water is soft (0.1% to 0.3% salinity) and generally clear (turbidity: 2.77 to 28.10 NTU). We identified 12 genera /species representing 6 families of Ephemeroptera. Heptageniidae are the best-represented family (4 genera). The *Caenis* and *Ecdyonurus* genera are considered with a wide distribution (occurrence frequency $C > 50\%$). The genera/species: *Dacnogenia coeruleans*, *Heptagenia sp.* and *Leptophlebia sp.* are of accidental occurrence ($C < 20\%$), reflecting their preferences to the least disturbed habitats. W. Chaaba has the highest species diversity ($S = 9$ taxa). **Conclusions:** The water streams of the Belezma national park have globally a medium hydrobiological quality which is acceptable but deserves to be monitored. W. Chaaba, located in the integral zone of the park, can be considered of better quality compared to the other wadis. Otherwise, it would be urgent to preserve the W. Hamla from disturbances, subjected to more or less pollution, particularly in downstream.

Keywords: Biodiversity, Ephemeroptera, Water streams quality, Belezma national park.

010

VALORIZATION OF SOME LOCAL MEDICINAL PLANTS

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Background: Recently, a great deal of interest has been developed to isolate novel bioactive compounds from terrestrial and marine resources because of their numerous health beneficial effects. Among the sources studied, we cite brown seaweeds (*Cystoseira barbata*) as marine

sources where we have investigated their polysaccharides (CBPPs) for antioxidant activity and *Pinus halepensis* Mill. and *Ficus carica* as terrestrial sources where we have investigated their lipid fraction and phenolic compound for a possible antiangiogenic, antioxidant, and antihyperlipidemic activities respectively. **Aims:** To evaluate the therapeutic potential of the polar and non-polar extracts of some marine and terrestrial local plants. **Methods:** The study of antioxidant activity of phenolic compounds and polysaccharide extract was determined by the radical DPPH*, ABTS*⁺ and FRAP assays and DNA breakage. The hypolipidemic potential was evaluated on experimental hyperlipidemia induced by Triton WR-1339, in *Albinos Swiss* mice, then the serum from the blood samples was used to estimate the various parameters of the lipid profile namely TC, TG, LDL, and HDL. The lipid fractions of *Pinus halepensis* Mill. were evaluated for their cytotoxic activity on three cells lines (Adenocarcinoma of human basal epithelial cells (A549), human colon adenocarcinoma (HCT15) and human myeloma (HL60)) by 3-(4,5-Dimethylthiazol-2-yl)-2,5 diphenyl-2H-tetrazolium (MTT). Antiangiogenic activity was also evaluated *in vitro* on endothelial cells tube formation, and *in vivo* on the chorioallantoic membrane of the chick embryo White Leghorn breed (CAM). **Results:** The results show that the CBSPs exhibited important DPPH radical-scavenging activity (100% inhibition at a concentration of 1.5 mg/ml) and considerable ferric reducing potential (24.62 mg ascorbic acid equivalents). Effective chelating activity and significant protective activity against hydroxyl radical-induced DNA breakage were also recorded for CBSPs. The results also imply that the neutral lipids, glycolipids, and phospholipids of *Pinus halepensis* Mill. seeds are not toxic and have antiangiogenic activity at concentrations of 1 mg/ml and 10 mg/ml and then the scavenging activity (IC₅₀) of *Ficus carica* extracts against the radical DPPH* and ABTS*⁺ varied from 346.2 to 461.38 µg/mL and 288.3 to 369.01 µg/mL for twigs and leaves respectively and from 50.82 to 54.2 µg/mL for FRAP assay. The results of the *in vivo* antihyperlipidemic activity have shown that leaves and twigs extracts had an effect on blood parameters in mice. **Conclusions:** All the results show that all species studied have significant pharmacological effects according to the test carried out.

Keywords: Medicinal plants; antioxidant activity; Antiangiogenic activity; antihyperlipidemic activity.

011

COMPARATIVE STUDY OF THE EMERGENCE AND GROWTH OF YOUNG SEEDLINGS OF FIVE VARIETIES OF PISTACHIO (*PISTACIA VERA* L.) OF SYRIAN ORIGIN

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Background: The aim of the present work is to study the emergence and growth of seedlings of five pistachio varieties that are: Batouri, Achouri, Neb-Djemel, Adjmi, and Bayadhi. The study was conducted in a greenhouse where the temperature, and the photoperiod were controlled. **Methods:** The seeds are germinated in pots filled with peat without going through the damp cold stratification at a temperature of 4°C. **Results:** The results showed that growth parameters (length and diameter of the plants) revealed significant tests while other parameters (emergence rate, root length, and the number of leaves per plant) had no significant tests. About the number of emerged plants per day, variety Achouri comes first while the variety Neb-Djemel comes last. About the number of emerged plants per day, variety Achouri comes first while the variety Neb-Djemel comes last. For the evolution of growth in height, it is on average 2cm per week until two months after emergence; then it becomes 0.37 and 0.88cm for the final week of growth. **Conclusions:** It can be concluded that the Batouri and Achouri varieties have the best growth qualities for use as rootstocks in the creation of pistachio orchards.

Keywords: Pistachio, variety, lifted, planting, growth.

012

COMPARATIVE STUDY OF MACROINVERTEBRATES FROM THREE RIVERS IN ARID AND SEMI-ARID REGIONS OF ALGERIA

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Background: The macroinvertebrates in Algeria are well-known due to the remarkable works of several researchers (Gagneur et al., 1986, Arab et al., 2004, Lounaci, 2005, Zougaghe, 2010). Nevertheless, the available works focus on the northern stream of the country. Moreover, in the rivers of the semi-arid and arid regions of the southern part of the country, which are characterized by a very low rainfall and a high evapotranspiration, the qualitative and quantitative data of these invertebrates remain unknown. **Aims:** Our present work will give a comparative study of the taxonomic diversity of benthic macroinvertebrates located in three wadis in Algeria, namely: Oued Sahel (Bouira region), Oued Djedir (Djelfa region) and Oued M'zi (Laghouat region). The latter was selected according to location in different bioclimatic stages in Algeria. **Methods:** The macroinvertebrates were collected from 14 stations in these three regions during 14 field trips starting from January 2012 to October 2013. The samples were collected using a kick-net sampler in 14 sites with a circular opening of 0.05 m² with a mesh size of 275 µm; the

procedure involves moving back and forward over the selected area by striking the substrate and passing the net over the disturbed zone. Harvested samples are transferred into plastic bags and fixed with 10% formalin on the field. In the laboratory, the specimens are rinsed and then kept in alcohol 70%. The totality of the specimens is identified under a stereoscope, the basic identification was done using the guide of freshwater invertebrates "systematic, biology and ecology" of Tachet et al. (2003). **Results:** The fauna identified in this work consists of 47851 individuals corresponding to 52 families and 85 taxa belonging to 4 main faunistic groups (arthropods, annelids, crustacea, and Gastropoda). The taxonomic wealth of the three wadis is manifested in 28 families for Oued M'zi, 33 families for Oued Djedir and 41 families for Oued Sahel. Our work led us to the evidence that the analysis applied on the three hydro systems, showed a high diversity in Oued Sahel with 59 genera, followed by Oued Djedir with 38 genera compared to 32 genera in Oued M'zi. **Conclusions:** These differences in taxonomic richness benthic macroinvertebrates from a wadi to another may be related to the climatic gradient.

Keywords: Macroinvertebrate, Taxon, Taxonomic Richness, Wadi, Algeria.

013

ANTI-INFLAMMATORY EFFECT OF ALKALOIDS EXTRACT FROM *FUMARIA CAPREOLATA* ON RAW 264.7 CELLS

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Background: *Fumaria capreolata* is used in traditional medicine in North Africa for its gastrointestinal and anti-inflammatory activities. **Aims:** The present study investigates the effects of total alkaloids extracted from the aerial parts of *Fumaria capreolata* (AFC) on LPS-induced inflammation in RAW264.7 cells. **Methods:** The effects of total alkaloids extracted from the aerial parts of *Fumaria capreolata* (AFC) on LPS-induced production of pro-inflammatory mediators (IL-6, IL-1β, iNOS, TNFα, COX-2, and MIP-2) in RAW264.7 cells were incubated in the presence of different concentrations (12.5, 25, 50, and 100 µg/mL) of AFC and 100ng/mL of LPS for 18h. **Results:** The total alkaloid extract from *Fumaria capreolata* (AFC) significantly reduced the inflammatory response by inhibiting the production of nitric oxide (NO) and IL-6 in a dose-dependent manner, without affecting the viability of cells, and down-regulated mRNA expression of pro-inflammatory key players: IL-6, IL-1β, iNOS, TNF-α, and COX-2. **Conclusions:** Total alkaloid fraction from *Fumaria capreolata* inhibits the expression and/or release of different anti-inflammatory mediators when evaluated in

vitro in LPS-stimulated macrophage RAW264.7 cells, which could contribute to its potential anti-inflammatory effect. Therefore, AFC may be a potential candidate for the treatment of inflammatory diseases, such as colitis and arthritis.

Keywords: Inflammation, cytokine, chemokines, alkaloid, *Fumaria capreolata*.

014

CLIMATE CHANGE EFFECT IN RADIAL GROWTH AND PRODUCTIVITY OF ATLAS CEDAR (*CEDRUS ATLANTICA* MANETTI) IN OUARSENIS MOUNTAINS (ALGERIA)

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Background: In the current context of climate change, forest species may have changes in their productivity, phenology, and range. **Aims:** This work aims to study the impact of climate change on radial growth and productivity of Atlas cedar in Ouarsenis mountains (Algeria). **Methods:** The climatic signal recorded in ring-width series of Atlas cedar trees was investigated by bootstrapped response function and pointer year analysis over the period 1930-2010. **Results:** The results show a major action of climatic factors on trees radial growth. Indeed, cedar is very sensitive to rainfall fluctuations throughout the year. This sensitivity is more pronounced for populations located at low altitude, on an abrupt slope, and on sandstone substrates. Pointer year analysis shows that dry years induced a significant radial growth decline and can trigger massive tree mortality, particularly in 1983, 1984, 1988, 1994 and 2002. **Conclusions:** The vitality of the species seems to be conditioned by the frequency of drought years.

Keywords: *Cedrus atlantica*, tree-ring width, Ouarsenis, drought, decline, Algeria.

015

MONITORING OXIDATIVE STABILITY AND PHENOLIC COMPOUNDS COMPOSITION OF MYRTLE-ENRICHED EXTRA VIRGIN OLIVE DURING HEATING TREATMENT

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Background: Lipid's oxidation is one of the main ways that affect the nutritional quality of extra virgin olive oil (EVOO) by losing its phenolic substances and especially during heating treatments. **Aims:** This study was focused on the evaluation of the effect of *Myrtus communis* phenolic compounds-enriched extra virgin olive oil (McPC- EEVOO) on phenolic compounds composition during flame, oven at 180 °C and microwave heating, at different exposure times, evaluated by reversed-phase dispersive liquid-liquid microextraction (RPDLLME)-HPLC- DAD-FLD. The K232 and K270 were also evaluated for all heating treatments. **Methods:** The heating in a butane-air flame heating (2, 3, 5, and 10 min) or in the oven at 180 °C (1, 2 and 3h) was assayed. The last heating treatment was applied by using for the first-time scientific microwave (5, 10, 15, and 20 min). The evolution of the phenolic compounds content of EVOO was monitoring by reversed phase dispersive liquid-liquid microextraction (RP-DLLME)-HPLC-DAD-FLD method. The K232 and K270 were also determined for all heating conditions. Monitoring oxidative stability and phenolic compounds composition of myrtle-enriched extra virgin olive during heating treatment by flame, oven, and microwave using reversed phase dispersive liquid-liquid microextraction (RP-DLLME)-HPLC-DAD-FLD method. **Results:** The obtained results showed that the enrichment of EVOO by myrtle extracts significantly prevents the consumption of endogenous phenolic compound from EVOO as phenolic alcohol and flavonoids in comparison to the control (EVOO without enrichment). The most protective effect was found during flame and microwave heating. The K232 values were significantly reduced during flame heating compared to the control and followed by oven heating, although K232 values in microwave heating were similar for all the oil examines. K270 was not affected by this enrichment of EVOO. **Conclusions:** Myrtle extracts may benefit the oils by improving their composition in antioxidant compounds and their oxidative stability. The development of a new functional food with EVOO and myrtle extract should be explored.

Keywords: Myrtle, Phenolic compounds, Treatment, functional food.

016

COMPARATIVE STUDY OF EFFECT BETWEEN TWO PESTICIDES, BIOLOGICAL PESTICIDE AND CHEMICAL PESTICIDE ON THE GROWTH OF PLANTS: STUDY CASE OF CUCURBITA PEPO.

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Aims: The main aims of our study were to compare the effect of two pesticides, one biological extracted from the plant "*Urtica dioica*" and a second chemical called "Acetamiprid", on the number of aphids pests which affected the plant of zucchini *Cucurbita pepo*. **Methods:** In order to evaluate this effect, we had infected 63 individuals divided into seven plots (witness plots, chemical pesticides plot 03 and biological pesticides plots 03) then measured the mortality rate of these aphids during the period from 20/02/2017 to 15/05/2017. **Results:** The results show that after the use of chemical pesticide the number of aphids have completely disappeared. Contrariwise, the liquid extract from *Urtica dioica* used such as a biological pesticide can be decreasing the number of aphids in zucchini and also used as a fertilizer corresponding to low increasing of aphid number during the 3rd dose.

Keywords: biological pesticide, chemical pesticide, aphids, zucchini.

017

CHARACTERIZATION OF NOVEL ANTIBACTERIAL PEPTIDES PRODUCED BY STRAINS OF LACTOCOCCUS LACTIS ISOLATED FROM ALGERIAN SAHARA CAMEL MILK

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Background: The antibiotic resistance is an actual serious problem in human health. The research of novel sources of antibacterial molecules is a priority. The camel milk is the best natural source of antimicrobial substances especially metabolites of lactic acid bacteria such as bacteriocins.

Aims: Our work is focused on the characterization of anti-*Listeria innocua*. *F* bacteriocins produced by lactic acid bacteria belonging to the genus *Lactococcus* isolated from camel milk. **Methods:** We tested the bacteriocins activities by diffusion wells method, followed by protease inactivation. The antibacterial peptides are extracted by

adsorption/desorption method and then separated on an SDS-PAGE and their activity is detected by the zymogram technique. On the other hand, genetic characterization of these molecules was realized by the plasmid curing using two antibiotics, Rifampicin and Novobiocin. The cure is checked by extraction of the plasmids followed by a migration on an agarose gel. The *Bac-mutants* obtained underwent testing activity by well diffusion method and by zymogram technique, using as a positive control, wild strains *Bac+*. **Results:** *Lactococcus lactis* ssp *raffinolactis* gave inhibition zones against *Listeria innocua* *F* strain with a diameter of 16 mm as well as by the zymogram has inhibition zones between 5 and 10 Kda. Bacteriocins produced are sensitive to the proteases used. The disappearance of the zones of inhibition after the plasmid treatment confirms the plasmid location of the genetic clusters bacteriocins. After curing of the plasmids, it is indicated that the genes for immunity to the parental bacteriocins are also carried by the same plasmid and therefore co-transcribed with genes encoding the bacteriocin. Finally, our work is completed by the determination of CMI of bacteriocins extracts; the value found is 7.14 IU/ml. **Conclusion:** Bacteriocins produced are sensitive to trypsin and pepsin, two proteolytic enzymes most commonly used to confirm the protein nature of bacteriocins and gave a protein pattern and a zone of inhibition of 9.26 KDa. This MW is situated between 5 to 10 KDa and it is corresponding to sub-class IIa of bacteriocins. The Minimal inhibitory concentration of bacteriocin was 7.14 IU/ml.

Keywords: Milk camel; lactococcus; bacteriocins; zymogram; *Listeria*.

018

BIODIVERSITY AND PLANT COMMUNITIES' ANALYSIS IN THE COASTAL ZONE OF CHLEF

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Background: The North-Eastern coastal area of Chlef is a remarkably developed Mediterranean ecosystem, characterized by a great floristic richness still very poorly known and requiring particular attention from both scientists and foresters. **Aims:** The main objective of this study was to perform a detailed floristic inventory in addition to the identification of the main vegetation units prevailing in this ecosystem, and finally the main environmental parameters affecting the floristic richness. **Methods:** Vegetation recordings were carried out in 7 stations during spring (March-April-May) by using the Braun-Blanquet seven-degree scale of abundance-dominance. In order to study the effects of environmental

factors on the species occurrence and distribution, a total of 7 soil samples were collected at a depth of 30 cm. Measured soil factors were the electrical conductivity (EC_e), organic matter (OM), pH, and elevation. In order to relate to the environment and vegetation assemblage, first, a detrended correspondence analysis (DCA) was performed followed by a redundancy analysis (RDA). The ϕ -coefficient of association, Jaccard coefficient of similarity and UPGMA were used to identify the main vegetation units. **Results:** A total of 87 species was recorded throughout the 7 stations. The hierarchical classification resulted in 4 clusters significantly different in term of floristic diversity. The statistical analysis of the 87 species led to the identification of 34 diagnostic species spread over 4 vegetation units with a fidelity coefficient ranging between 55 to 100% each, 28 differential species among which 16 species common to 2 vegetation units and 12 species common to 3 vegetation units. According to the redundancy analysis (RDA), a very strong environment-flora relationship was detected, the strongest parameters affecting the flora occurrence and distribution were the altitude and pH, this finding was highly concordant with the results of the detrended correspondence analysis (DCA) which showed a very strong altitudinal gradient. **Conclusions:** Among the very few ecological studies carried out in this region, this study showed the importance of the floristic diversity in the North-Eastern coastal area of Chlef in terms of occurrence, composition, and distribution. In this area, altitude was the most important environmental factor affecting the flora.

Keywords: Biodiversity, Coefficient of Fidelity, Vegetation Units, Chlef.

019

ESTIMATION OF POPULATION LEVELS OF SOME NATURAL ENEMIES OF CITRUS APHIDS IN EASTERN MITIDJA (ALGERIA)

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Background: The regulation of aphid populations on citrus by their natural enemies is a biological control approach that can be very successful. **Aims:** Contribute to an exhaustive inventory of the entire aphidophagous guild in Algeria. **Methods:** Sampling of the natural enemies of citrus aphids with yellow stained plates is conducted for 12 weeks, from April 23 to July 24, 2014. The study focused on four species of the economic and human impact that are very important in Algeria, the orange tree *Citrus sinensis*, the lemon tree *Citrus limon*, the clementine *Citrus clementina* and the pomelo *Citrus x paradisi* at the Horticultural Station National Agronomic School of El Harrach. **Results:** This study revealed the presence of 563 individuals distributed among 17 aphidophagous species. The family Miridae is the

majority of 366 individuals or 65.01% of the total number. *Campyloneura virgula* is the most abundant with 284 individuals (50.44%) followed by *Heterotoma planicornis* with 82 individuals (14.56%). The family Cecidomyiidae represented by the only species *Aphidoletes aphidimyza* occupies the second place with 66 individuals (11.72%). The family Braconidae, the only parasitoid family studied in this study, counted 61 individuals (10.83%), the species *Lysiphlebus fabarum* is the most represented with 28 individuals (4.97%). The Coccinellidae, despite their species richness, showed only 42 individuals (7.46%), *Pullus (Pullus) subvillosus* is dominant with 33 individuals (5.86%). Forficulidae and Chrysopidae are poorly represented with 20 individuals (3.55%) and 8 individuals (1.42%) respectively. **Conclusion:** Aphids are very present in our orchards; periods of intense outbreaks correspond to peaks of vegetative growth. To remedy this problem that reduces the harvest, our hope is that we can reduce pesticide treatments by promoting biological control by natural enemies.

Keywords: Natural enemies, Aphids, Citrus, Eastern Mitidja

020

MODELING OF NITRATE LEACHING KINETICS DURING BLANCHING: CASE OF SPINACH LEAF MIDRIBS

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Background: Nitrates, although sometimes favorable to health, can give inside the body and under certain conditions, nitrosamines which are carcinogenic substances. Taking into account all these factors, the knowledge of the nitrate content in food is imperative to allow consumers to choose their food knowingly. **Aims:** The leaching kinetics of nitrates during water blanching of spinach (*Spinacea oleracea* L.) leaf midribs (including petioles) (SLM) during water blanching is investigated under different conditions. **Methods:** The sample handling applied to study the leaching of nitrates during water blanching of SLM at 60, 70 and 80°C. Presently, six models, namely Henderson and Pabis, logarithmic, zero order, Lewis, Page and Wang, and Singh are tested to analyze experimental data related to the kinetic of nitrate leaching during water blanching of SLM. Moreover, to elucidate the effect of the temperature on the diffusion rate, the equation of Arrhenius is applied. **Results:** The results show that after 15 min of treatment, the rate of nitrate removal (RR) is of 20, 60 and 80% at 60, 70 and 80 °C respectively. Moreover, among six tested models, the logarithmic model is the most appropriate to

describe the kinetics of diffusion of nitrates from food matrix into the blanching water, whatever the processing temperature. Finally, the activation energy characterizing the nitrate leaching is deduced ($35.76 \text{ kJ. Mol}^{-1}$) by applying the Arrhenius equation for the rate constant appearing in the most appropriate model. **Conclusions:** It follows that the water blanching is an effective tool for controlling the nitrate content in food by varying the time and temperature of treatment.

Keywords: Nitrate, Spinach leaf midribs, Blanching, Modeling.

021

ICT FOR MANAGEMENT A GREENHOUSE

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In the face of an important demographic development where field production is no longer able to satisfy the needs of fruit and vegetable consumption. And with the application of new information and communication technologies in the field of agriculture, intelligent agricultural greenhouses will take care of the different agricultural tasks in an autonomous way. The objective of this work is to make a study for the ICT in the greenhouses and to propose a design which manages climate under the greenhouses easily.

Keywords: Information and communication technologies, intelligent agricultural greenhouses, ICT, greenhouse.

022

INTERACTION STUDY OF PVC / SALIVA-BASED TOYS AND APPLICATION OF THE ULTRASOUND METHOD TO REDUCE MIGRATION

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This work is therefore in order to study a process of treatment by ultrasound, used for reducing the migration of additives contained initially in toys plasticized by DOP based on polyvinyl chloride stabilized with expoxidised sunflower oil (ESO). Two formulations were carried out at different rates plasticizers (15% and 45%), migration tests

in synthetic saliva in the absence and in the presence of α -amylase with and without agitation to 37°C were made out over a period of 1, 3, and 6 hours. The phenomenon of migration is studied on the basis of preliminary studies based on the change in mass, and only with the technical analysis: infrared Fourier Transform (IRTF) and gas chromatography coupled with mass spectrometry (GC/MS). The present work has shown that the method of ultrasound treatment can be used to reduce the migratory phenomenon. The highest rates of mass change were observed in saliva in the presence of the enzyme during ultrasound treatment trials. Moreover, it is the plasticized formulation which gave the highest rates of mass variation, which shows the influence of the nature of the simulating medium, the stirring and the treatment as well as the initial content of the plasticizer (DOP) on the phenomenon of migration. The FTIR technique made it possible to characterize all the additives entering into the two formulations in a first step. Finally, the GC / MS made it possible to obtain the chromatograms of the DOP of the control and the samples treated or not with ultrasound having undergone migration tests. Overall, this study has therefore confirmed that the migration phenomenon has taken place and that the ultrasound treatment makes it possible to reduce the migration of the additives contained in the PVC specimens.

Keywords: PVC, migration, DOP, Toys, FTIR, GC/MS, ultrasound.

023

DIAGNOSIS OF THE OLIVE TREE VERTICILLIOSIS IN THE PROVINCE OF BOUIRA

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The olive tree is among the oldest fruit trees grown mainly in the Mediterranean countries; this tree is well known for its nutritional and therapeutic interest. The study focuses on fungal diseases of olive trees in the prospecting during the agricultural crops on 2017 on olive trees of Assam (Bouira) showed the presence of fungal diseases; verticilliosis and alternariasis. In the first part, we realize the collection of the olive branches presenting of shriveling, the stain of the foliage, the yellowing, and tumors in the region of Assam. In the second part, after the isolation and identification of the samples, the macroscopic and microscopic study shows that two species of phytopathogenic fungi were isolated and identified: isolate of *Verticillium dahliae*, *Alternaria alternata*. The study results showed that our tests of direct confrontation, on culture medium, between *Verticillium dahliae* et *Bacillus thuringiensis* have revealed that the latter has been able to inhibit mycelia criticism of *Verticillium*

dahlia with a percentage inhibitor 18%, the results obtained with *Alternaria sp* and *Bacillus thuringiensis* is a percentage inhibitor 14%, therefore the sensitivity of *Verticillium dahlia* to the effect inhibitor of *Bacillus thuringiensis* is more important than sensitivity of *Alternaria sp*.

Keywords: The olive tree, the prospecting, Asnam, *Verticillium*, *Alternaria* and direct confrontation.

024

PLANT EXTRACT AND FECL₂ MIXTURE: TOWARDS THE NANO-OBJECTS BASED ON IRON OXIDE BIOSYNTHESIS

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The nano-objects synthesis has become a matter of great interest in recent times due to their various advantageous properties and applications in several fields. The different plants materials exploration for nano-objects synthesis is considered as a green technology because it doesn't involve any harmful chemicals. This strategy was used during this study to elaborate iron oxide nano-objects by mixed ferric chloride solution with green seaweed containing sulfated polysaccharides as the main factor, which acts as a reducing agent and stabilizer. The obtained nano-objects exhibit different structures, by changing heating duration, which can make them potentially useful in various applications.

Keywords: biosynthesis, nanotechnology, iron oxide nano-object, green seaweed.

025

THE SOCIO-ECONOMIC EFFECT OF THE AGRICULTURAL POLICY ON THE EVOLUTION OF OLEICULTURE IN THE WILAYA OF DJELFA

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The olive-tree is one of the trees which occupy an important place in Mediterranean fruit-bearing arboriculture. Currently, it is regarded as a major element of the agricultural economics in certain countries following the

example our country. The wilaya of Djelfa classified as an arid area that experiences a considerable development and accelerated agricultural activity. Within this framework, several programs were developed in favor of agriculture in general and olive cultivation in particular. Indeed, Algerian olive cultivation knew these last decades, of deep changes which aim, on the one hand, the improvement of the productivity, of the olive-growing exploitations and on the other hand the increase in the surfaces of the olive-tree in several cultivars; in order to ensure a qualitative and quantitative increase in the production out of olive and olive oil and to improve the biodiversity. Our objective in this communication is to determine the socio-economic impact of the program of the agricultural support, in particular, the FNDA on the blooming of the die olive cultivation in the arid regions; the case of the Wilaya of Djelfa. Two methods were used; an investigation into the ground near certain actors and a library search. Our study was based on the evaluation and the analysis of some variables used by OECD (SPM, ESP...). To reinforce our analysis, we treated our results by statistical tools (SPSS 2015, version 23). The results obtained indicate that a great development is recorded in the deferent segments of the die upstream and downstream in the area of study. So an improvement was marked in the principal parameters techno-economic taken into account, namely the agricultural surface, the production, output, the income and the standard of living of the farmers. However, the subsidies granted to the olive growers of the area remain very weak relative with the agricultural gross domestic product, and in glances of what is practiced in the OECD countries. These results also remain very far with the traced objectives; following several technical constraints and socio-economic.

Keywords: Oleiculture, Djelfa, agricultural support, socio-economic parameters, impact, development.

026

AGRICULTURAL BIODIVERSITY OF THE OASIS SYSTEM IN SOUTH-WESTERN ALGERIA. EXAMPLE OF APPLIED AGROECOLOGY

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The oasis cropping system is essentially based on crops in stages. This agricultural biodiversity, which characterizes agrosystems, combines the domestic biodiversity planned by the farmer (palm, fruit trees, market gardening, cereals, fodder, and livestock). Oasis agriculture is an ecological agriculture in principle. Farm operators surveyed generally exclude chemical inputs and use manure; alternate crops of different families at the level of the parcels to preserve soil fertility. The present work concerns 37 agrosystems of southwest Algeria prospected in May 2009 and 2017. A

total of 58 cultivated species belonging to 46 genera and 18 families have been inventoried. The Shannon (3.69) and Pielou (0.63) indices respectively indicate moderately important crop diversity and relatively good distribution in different agroecosystems, respectively.

Keywords: Agrosystems, Agricultural biodiversity, diversity index, South-western Algeria.

SIEAB 2017 POSTER ABSTRACTS

027

STUDY OF CHRONIC DIETARY NEUROTOXICITY BY ACETAMIPRID® IN RATS

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Background: Pollution by pesticides is the main result of technological development in agriculture; Acetamiprid® (AC) is a pesticide of the family of new generation organochlorines, so it is controlled by daily doses for short term, but there is a risk in case of chronicity. **Aims:** The objective of our study is to study biochemical and behavioral neurotoxicity of AC. **Methods:** In this study, we measured the biomarkers of mitochondrial oxidative stress (GSH, GPx, CAT, SOD, and GST) and brain neurotransmission. Data analysis was performed using Minitab program, a t-test was used to assess the difference between the two groups. **Results:** The results obtained after administration of AC at 3.14 mg/kg/day of oral weight for 90 days show that AC caused a neurotoxic effect (disruption of neurotransmitter levels). Acetamiprid® has an overall pro-oxidative effect; this is revealed by the significant decrease in GSH levels, and the enzymatic activity of GPx and CAT in the brain. **Conclusions:** To conclude that AC is a neurotoxic insecticide for rats at a dose of 3.14 mg/kg/day.

Keywords: Pollution, Acetamiprid, Mitochondria, Oxidative stress quality, Cheese.

028

STUDY OF SOME PHYSICO-CHEMICAL PARAMETERS OF MILK DELIVERED AT THE DAIRY INDUSTRY LOCATED AT THE WILAYA OF BOUMERDES

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Background: Milk of animal origin would play an important part in the diet of populations benefiting only from a very low nutritional intake of lipids and having limited access to other foods of animal origin such as meat. The quality of milk became an important concept to take into account for its payment. **Aims:** The objective of this work was to study the physicochemical composition of a collected milk intended for cheese manufacturing (EDAM type) at a pressed cheese production unit located at the wilaya of Boumerdes. **Methods:** The weekly sampling of the milk was

carried out for a period of 3 months from the tank trucks of the collection, to be analyzed on the spot in the laboratory. This included measurement of pH, titratable acidity, density, total dry extract (TDE), fat-free dry matter, and fat level (FL). **Results:** The results showed values slightly under the standard for pH (6.56) and in the dairy acceptance standard for density (1028.64 g/L), titratable acidity (16.79 °D), and an FL value in the order to 31.66 g/L. This value is greater than the minimum threshold of acceptance of the milk of mixtures intended for their transformation into derived products, thus suggesting an appreciable fat content of the milk delivered by the collectors from dairy farms, which have been encouraged to increase it according to the bonus system implemented by the dairy industry (0,5Dinar/gram above to 30 g/L). **Conclusions:** The results of the physicochemical analyzes of the collection and mixing milk during this period confirmed the importance of the quality control, in order to ensure both the dairy processor and the consumer, a product meeting their expectations.

Keywords: Cows' milk, Dairy industry, Fat level, Milk quality, Cheese.

029

ANTIBACTERIAL ACTIVITY OF CITRUS HONEY AGAINST ENTOMOPATHOGENIC BACTERIA ISOLATED FROM VARROA DESTRUCTOR

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Background: Honey is a naturally sweet substance produced by honey bees from the nectar of blossoms or honeydew. It has been recognized to presents antibacterial, antifungal, and prophylactic medicinal properties. **Aims:** To evaluate the antibacterial activity of Citrus honey at different concentrations (25%, 50%, and 100%) against the entomopathogenic bacteria (*Bacillus* sp and *Pseudomonas* sp) isolated from *Varroa destructor*, the obligate ectoparasite of the bee. **Methods:** The microscopic and biochemical identifications of isolated bacteria were utilized. To test this activity, the agar diffusion method is used. **Results:** This study demonstrates that, in vitro, the different concentrations of the Citrus honey have clearly an antibacterial activity against *Bacillus* sp and *Pseudomonas* sp, isolated from *V. destructor* (the hematophagous of the honeybee), but the highest growth inhibition of these bacteria was observed with honey at a concentration of 100%. Citrus honey significantly inhibits the growth of *Bacillus* sp compared with *Pseudomonas* sp. **Conclusions:** The preliminary study has been a promising beneficial effect of Citrus honey against entomopathogenic bacteria.

Keywords: Citrus honey, antibacterial activity, *Bacillus* sp, *Pseudomonas* sp, *Varroa destructor*.

030

BIOINSECTICIDAL ACTIVITY AGAINST *CULEX PIPPIENS* L., MOSQUITO VECTOR OF HUMAN DISEASES

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Background: According to the World Health Organization, culicidal fauna, with of its wide distribution and strong abundance, is responsible for the nuisance (painful and troublesome bites) and the transmission of parasitic diseases such as malaria, chikungunya and yellow fever. Although the insecticides seem to be very effective on culicidal mosquitoes, they have several disadvantages. Significant accumulation of active matter in treated, aquatic and terrestrial ecosystems is a pollution problem. Control of insect pests, including culicidae, includes several methods, but biological control is the safest and most selective because it depends on natural enemies without causing damage to the environment. **Aims:** For all these reasons, we are interested in the study of a plant belonging to the family Urticaceae *Urtica dioica* L. as a means of biological control in order to treat this kind of insects. **Methods:** A spectral analysis by infrared, High-performance chromatography reverse phase analysis HPTLC- RP18, of the insecticidal test against *Culex pipiens* were carried out. **Results:** The spectral analysis by infrared showed the existence of a diversity of functional groups characteristic of the alkaloids whose grouping C=O. HPTLC- RP18 of alkaloids indicates the presence of aconitine, which is an alkaloid acting on the nervous system. The results of the insecticidal test against *Culex pipiens* show that the aqueous extract and that of the alkaloids have important insecticidal properties on *Culex pipiens*. The LD50 values for L4 were 4.48mg/ml and 6.91mg/ml for the aqueous extract and that of the alkaloids successively. **Conclusion:** The results obtained are therefore encouraging and suggests the use of the nettle secondary metabolites as a bioinsecticide.

Keywords: Urticaceae, alkaloids, *Culex pipiens*, infrared, aqueous extract.

031

REHABILITATION OF DUNES

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Background: in Djelfa-Boussaâda dune cordon launched in 1982 by the I.N.R.F, the covering of the vegetation under the planting feet is more important than outside. **Aims:** The work undertaken is concerned with the study of the occupation of space by the vegetation used for the biological fixation of the dunes at El-Mesrane. **Methods:** It is a diachronic approach based on the exploitation of the surveys carried out during the periods (1984-1987), (2005-2009). The covering of the vegetation changes according to the dominant fixative species; For example, under the feet of *Retama retam* Webb where the foliage of the species provides shade and protection by creating a factor conducive to regeneration. **Results:** there is a 70.3% overlap, but between its clumps, only 53.6% is recorded. This result is identical for all species planted with overlapping flora covering 50% under the tufts but less between them, but an exception is made for *Tamarix aphylla* (L.) Karst where the vegetation occupies relatively equivalent areas under the foot of the tree and outside of the foot, despite the importance of the litter that covers 35% of the surface on average. **Conclusions:** We note that the fixing species also play an important role in the distribution of accompanying vegetation and in the occupation of space. The diversity and number of species vary depending on the species planted.

Keywords: climatic factors, Desertification, biological fixation mechanical fixation.

032

FUNCTIONAL PROPERTIES OF BOVINE BONE GELATIN AND IMPACT ON QUALITY OF SET YOGURT

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Background: Improvements in the shelf life of yogurt can be brought about by addition of gelatin not only increase its nutrient content but also improve its properties. **Aims:** The objective of this study was to extract the gelatin from bovine bone, characterize and understand their functional properties and to study the effect of its incorporation on the quality of yogurt. **Materials and Methods:** Gelatin was extracted from bovine bones after their characteristics and functional properties were analyzed in comparison with commercial gelatin (CG). The effects of bovine gelatin (BG) addition on properties of yogurt added with bovine gelatin (YABG) were studied. **Results:** The yield of BG was 6.32±0.20% and the pH of BG was 9.63±0.01. It was observed that BG and CG had a higher solubility at low

pH with a maximum value observed at pH 4. A significant effect ($p < 0.01$) of ionic strength was observed. Increasing the NaCl concentration to more than 2% resulted in a significant decrease in the solubility. BG showed higher foaming expansion (FE) and higher foaming stability (FS) than CG. Increasing the concentration of BG and CG decreased the emulsifying activity index (EAI) but increased the stability index (ESI). Significant effects of BG rate on acidity and pH of YABG were observed. The viscosity of YABG was increased significantly ($p < 0.01$) with increasing the BG rate. YABG added with 1.5% of BG recorded the highest viscosity. In addition, there was a significant effect of BG addition on *Streptococcus thermophilus* counts. According to sensory properties, the addition of BG had a significant effect on adhesiveness, cohesiveness, and taste of the YABG. Sensory results indicated a preference for YABG with 1.5% of BG. There was no significant effect of BG on the odor and aftertaste of YABG. **Conclusions:** The bovine bone could serve as raw material for the extraction of gelatin with desired functional. The addition of 1.5% of this gelatin had a considerable effect on the physicochemical properties and the texture of YABG.

Keywords: Gelatin, yogurt quality, functional properties, conservation, extraction, fermentation, post-acidification.

033

BREWER'S GRAINS: CHARACTERISTICS, CHEMICAL COMPOSITION AND USE IN ANIMAL FEEDING

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Background: Brewers grains are the solid residue left after the processing of germinated and dried cereal grains (malt) for the production of beer and other malt products (malt extracts and malt vinegar). **Nutritional attributes:** Brewers grains are primarily used in ruminant feeding (Dairy cattle, growing cattle, sheep, and goats) and monogastric animals (Poultry and rabbits), they are palatable and readily consumed. Brewers grains are quite rich in protein and fiber can replace commonly used protein or energy sources such as corn and soybean meal. According to the Feedipedia database on a dry matter (DM) basis the dried product contains 25.8% (19.5-31.9%) crude protein (CP), 6.7% (1.7-9.9%) ether extract (EE), 15.8% (11.8-19.9%) crude fiber (CF), 21.9% (15.5-28.6%) acid detergent fiber (ADF), and 5.4% (3.0-10.6%) lignin and gross energy (19,7 MJ/kg). **In Algeria**, several studies have already initiated on the possibility of substituting imported raw materials with brewer's grains, available locally, in animal feeding and particular in diets on the growth rabbit. **Conclusion:** Dried brewers' grains

can be an alternative feedstuff to alfalfa hay, corn, and soybean meal, protein and fiber sources commonly used in rabbit diets can lower feed costs and can reduce the environmental impact caused by their improper disposal.

Keywords: Algeria, Brewers grains, Chemical composition, Animal feeding.

034

ANALYSIS OF THE EFFECT OF LIVESTOCK MANAGEMENT AND CLIMATE ON DAIRY PRODUCTION IN ALGERIA

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Background: Currently, milk is one of the main staples of our daily diet. It is a nutritious, complete and an ideal food covering all the needs of the body during the early months of life. Milk and dairy products are subject to a very strong demand, which is still unsatisfied. This is why dairy cattle farming has undergone through a wide and fast evolution in recent years, with an increase in the number of the animals per farm and the multiplication of large production units in order to satisfy the ever-increasing needs for milk.

Aims: This study analyzes the effect of dairy cattle conditions; food, shelter, hygiene, climate, and race on dairy production in quantitative and qualitative terms in two arid and semi-arid regions of Algeria. **Methods:** This work was carried out in two different regions: In the area of Elhadjeb, located 15 km to the south-west of the wilaya of Biskra. In the area of Ain Touta, located 35 km from of the wilaya of Batna. The research involved monitoring the dairy production of two imported races; Pie Noire and Montbeliarde cows in 10 farms in the two regions. The physicochemical analyses performed concern: Density, temperature, titratable acidity, fat rate, total dry matter rate, and proteins rate. **Results:** Livestock buildings: 80% of the buildings are modern, 20% of them are old. Reproduction: The farms subject to our study have been practicing reproduction by both natural breeding and artificial insemination; the reproductive balance is as follows: In 70% of the farms the reproduction balance is established on the basis of the data collected from the individual records of each cow, in 30% of the farms the reproduction balance is established from the data collected from the stable planning. Milk production: concerning dairy production, the results were as follow: In 70% of farms, milk production is average. It varies from 20 to 25 liters per day, whoever the production is relatively good in 30% of the farms with a daily production of 30 to 35 liters. Food: during winter time, the ration is composed of: concentrate, straw, and silage. During the spring season, it is composed of: concentrate, alfalfa, hay, silage, and straw. Milk analyses: the density is between 1028 and 1033.8, titratable acidity is between 14.5 and 21, fat content is between 31 and 51g/l, total dry matter content is between 4.7 and 5.2%, protein matter content is between 4.46 and

5.14%. The comparison of the different firm milk values has shown that milk values in ELHADJEB region are lower than that of Ain Touta. **Conclusions:** the results obtained have shown that the environment and livestock farming conditions have a significant impact on milk production both quantitatively and qualitatively. To improve the quality of milk, it is necessary to ensure the good behavior of the herds, and a good feed always depending on climatic conditions.

Keywords: livestock management, dairy cattle, milk, dairy production, climate.

035

STUDY OF THE BIODIVERSITY OF SOME SPECIES OF NOCTUIDS IN DIFFERENT ENVIRONMENTS OF MITIDJA (ALGERIA)

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Background: The moths are cosmopolitan species characterized by a perfect adaptation to the different biotopes, this order includes between 155,100 and 174,233 described species, it is of great economic importance because it includes species that are characterized by extreme polyphagia and can attack all plant species, whether vegetable, floral, ornamental or even spontaneous. **Aims:** In the present study, we tried to carry out an inventory of moths using a light trap in two different sites of Mitidja (Algeria). In addition to the inventory, we will study the flight activity of the main species caught by pheromone traps in three stations. **Methods:** Two types of traps were used: Pheromone traps have been installed in three stations, namely (ENSA) in El-Harrach, (ITCMI) from Staouali and Boudouaou-El Bahri. This type of trap allowed us to track and capture the males whose counting occurs every decade between September 2014 and November 2015. Light trap two traps were installed in the (ENSA) in El Harrach and (ITCMI) in Staouali, between September 2014 and November 2015. The samples are taken every and the harvest is done in plastic pellets bearing the date and place of collection. **Results:** this work, conducted during the year 2014 in different regions of the Algerian coast, an initial list of 32 species of noctuids was established with illustrations of male genitalia. The inventory shows the presence of 32 species which are distributed in 9 subfamilies: Acontiinae, Noctuinae, Acronictinae, Cuculliinae, Oncocnemidinae, Plusiinae, Heliiothinae, Catocalinae and Euteliinae. Seventeen tribes and 32 genera. The Noctuid tribe is the most dominant with 6 species, 18.75% of the inventoried noctuids. Moth catches from light trap data show nearly uninterrupted butterfly presence throughout most of the year for most of the species surveyed. The curve gives us 2 main peaks, the most important is that of November with a maximum catch of

207 individuals. The second peak is noted in December with 185 individuals. In contrast, the minimum catch is recorded in June and September with respectively 39 and 43 individuals. The activity of the moths is conditioned by two main factors, on the one hand, the climatic conditions, especially the temperature and the rainfall and on the other hand the diversity of the host plants. Added to this are the bio-ecological characteristics of the noctuid species, such as the phenomenon of migration and diapause. **Conclusions:** Monitoring of the flight activity of the global moth population during 2014 shows that the majority of moths complete their cycle towards the beginning of October with a flight period extending until the end of February. The results show that the quality of the food and the climate play an important role in the activity of the moths.

Keywords: Littoral, Moths, Diversity, Genitalia, Algeria.

036

EFFECT OF REHABILITATION BY THE TECHNIQUE OF DEFENDING STEPPE RANGELANDS IN THE REGION OF NAËMA

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Background: The steppe tracts of the Naama region are also a representative example of the arid zones threatened by the scourge of desertification, a strong anthropic pressure, and climatic constraints. **Aims:** Among the pastoral remedies proposed for the rehabilitation of these degraded rangelands, the technique of pastoral improvement "put in defense" has benefited ecologically. This technique favors the natural regeneration, the most indicated to induce the natural biological uplift of the steppe species. **Results:** The application of this defense for the rehabilitation of the steppe paths of Naama allows a quantitative and qualitative increase in the floristic richness, a development of species of great pastoral value. This results in a large phytomass, and a relatively high vegetation cover. The floristic composition is much diversified. It has promoted the resettlement and re-emergence of species at risk of extinction. **Conclusions:** On the basis of these results, we can emphasize the interest and the constructive impact of the defense in terms of recovery, floristic richness and phytomass. This aspect of vegetative reconstitution ensures the perennality of the vegetal mat; it cannot be achieved only with the collaboration of different parts of pastoral society.

Keywords: Steppe, Naama, biological uplift, enclosure, desertification.

037

AGRONOMIC VALORIZATION OF OLIVE MILL WASTEWATERS BY SPREADING

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Background: The development of the olive oil industry and the importance of production is not without consequences for the environment. Indeed, olive oil extraction generates two residues: pomace and Olives Mill wastewaters. Uncontrolled rejection of water gardens is an environmental problem for Mediterranean countries. These are highly polluting effluents that particularly affect the quality of the water in which they are discharged. **Aims:** To alleviate this environmental problem, the agricultural spreading of the Olive Mill wastewaters is an alternative to eliminate the risks of pollution and to valorize this effluent. **Methods:** In this study, Olive Mill wastewaters are used as fertilizers, at different concentrations (5L/m², 10L/m², and 20L/m²), at the level of an olive orchard (ITAF, Sidi-Aich, Algeria). We have followed their impact on soil fertility by analyzing some physicochemical parameters. **Results:** The average fertilizer input obtained by spreading 1 m³ of Olives Mill wastewater on the soil is 96.7 kg of organic matter and 6.9 kg of mineral matter of which 1.68 kg nitrogen, 0.237 kg phosphate, and 1.58 kg potassium. The 20L/m² dose was unfavorable to the agronomic qualities of the soil since it resulted in high salinity, excessive potassium content, and reduced biological activity. The 5 and 10 L/m² doses present favorable conditions for soil fertility, in fact. The high organic load of olive mill wastewaters improves soil structure and promotes biological activity. It also allows to raise the water retention capacity (WRC), due to an increase in the rate of organic matter (OM). A rise of electrical conductivity (EC), which indicates an enrichment in salts and mineral elements and mainly phosphorus, potassium, and nitrogen. The acidity of the olive mill wastewaters did not have a great influence on soil pH, because of its richness in limestone, which gives it a buffering capacity. **Conclusions:** Olive Mill wastewaters used in our experiment contains appreciable amounts of organic and mineral elements that can replace some nutrients brought by conventional fertilization. Agricultural spreading of Olive Mill wastewaters constitutes an alternative allowing valorizing them, but on the condition that this operation is controlled and while respecting the doses to be applied.

Keywords: Olive mill wastewaters (OMW), spreading, organic matter (OM), mineral elements, valorization, soil, fertility.

038

RESPONSE SURFACE METHODOLOGY FOR THE ELIMINATION OF HUMIC SUBSTANCES FROM WATER BY COAGULATION USING POWDERED SADDLED SEA BREAM SCALE AS COAGULANT-AID

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Background: Removal of organic substances from water by coagulation with alum and ferric salts were studied by means of conventional jar-test procedures. **Aims:** The novelty of this work is the use of powdered Saddled sea bream scale as coagulant-aid for enhancing the coagulation process with a low concentration of alum (Al₂(SO₄)₃·18H₂O). Performance of usual coagulation process depends on the chemical structure of organic components as phenol (PHL), salicylic acid (SA), phthalic acid (PHA) and humic substances (HS), their initial concentrations, coagulant dose, pH medium, and other operational conditions. **Methods:** The response surface methodology (RSM) was applied to optimize the coagulation process for the elimination of humic substances from water. Initial HS concentration, alum dose, rapid and slow mixing speed, powdered fish scales (PFS) mass, and pH were the factors considered in the design. **Results:** A quadratic model was developed to express the removal efficiency of HS (response Y) as a function of the six parameters. The high values of R² and R² adjusted coefficients verify a good correlation between the observed and the predicted response values. **Conclusions:** The optimal conditions for the coagulation process in which the removed efficiency of HS reached 100%, were achieved at initial HS concentration of 10 mg/L, alum dose of 1.09 mg/L, rapid and slow mixing speed of 250 and 67.02 rpm, powdered fish scale mass of 1.13 mg at the pH medium of 5.0.

Keywords: Coagulation, Coagulant-aid, Humic substance, Powdered Saddled Sea bream scale, Response surface methodology (RSM), Natural organic matter.

039

PROTECTIVE EFFECT OF QUERCETIN ON AFLATOXIN B1-INDUCED HEPATIC DAMAGES IN RATS

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Background: Aflatoxin B1 (AFB1) is a fungal toxin that contaminates food and feedstuff most especially grains

and nuts during pre- or post-harvest conditions. It causes both acute hepatotoxicity and liver carcinoma in exposed humans and animals. AFB1-induced hepatotoxicity results from its highly reactive intermediate, AFB1-8, 9-epoxide which binds to nucleic acids forming adducts and also from reactive oxygen species accumulation, which are precursors of hydroxyl radicals that interact with DNA and lead to mutations. **Aims:** This study treats the preventive effect of Quercetin (QE); one of the most abundant bioflavonoids, against AFB1 acute hepatotoxicity in rats. **Methods:** Thirty male albino's rats were divided into three groups: Group 1 (control): served as a vehicle-treated group. Group 2 (AFB1): rats were treated with a single intraperitoneal dose of AFB1 (1mg/kg b.w). Group 3 (QE+AFB1): animals received QE at (10 mg/kg b.w) daily for 7 days followed by AFB1 (1mg/kg b.w) intraperitoneally in the eight day. **Results:** AFB1 at the amount of 1mg/Kg altered liver functions. Lactate dehydrogenase (LH), alkaline phosphatase (PAL), alanine, and aspartate aminotransferases (ASAT/ALAT) were found to be significantly increased in the serum of AFB1 treated rats, suggesting hepatic damages. The hepatic tissue from AFB1 treated rats showed a marked depletion in reduced glutathione (GSH) content, a significant increase in malondialdehyde (MDA) levels and inhibition in superoxide dismutase (Cu-Zn SOD), catalase (CAT), glutathione peroxidase (GPX) and glutathione S transferase (GST) enzymatic activities. *Per os* pretreatment with quercetin reverted conditions to near normalcy. Histological changes confirmed these findings. **Conclusions:** The results of this study indicate that quercetin reduces AFB1- hepatotoxicity by its antioxidant properties.

Keywords: Aflatoxin B1, Hepatotoxicity, Quercetin, Antioxidant- prooxidant balance.

040

IMPACT OF BULB SIZE AND CULTURE CLIMATIC CONDITIONS ON GROWTH AND FLOWERING OF POLIANTHES TUBEROSA L

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Background: Tuberose (*Polianthes tuberosa* L.) is an ornamental and medicinal plant, it is cultivated in tropical and subtropical regions, it is also grown on a large scale in China, Egypt, France, Italy, South Africa, New Zealand, Spain, Sri Lanka, North Carolina, India, USA, and Japan for its fragrant cut flowers and perfume industries. *P. tuberosa* flowers are the source of the high-quality tuberose oil that remains today the most expensive raw material in perfumery. **Aims and Methods:** The bulb size influences the flowering of *P. tuberosa*, for this reason in our study, we

studied the growth and flowering in *P. tuberosa* L. under natural conditions and under shelter using different bulb diameters. **Results:** According to the obtained results, a good growth of tuberose was noticed by the big bulbs, i.e., bulb germination, leaf emergence, and the number of leaves by dominance for the bulbs cultivated under shelter compared to those grown under natural climate. Regarding flowering, it was influenced mainly by bulb size, where only big bulbs gave flowers, and flowering characteristics were improved by the culture under shelter compared to the culture under natural condition. **Conclusions:** In general, and according to the present work, for a good growth and for a better production of flowers of *P. tuberosa*, cultivation under shelter using bulbs of 2-4 cm in diameter are recommended.

Keywords: *Polianthes tuberosa* L., culture, under shelter, growth, flowering, bulb size.

041

ACUTE TOXICITY OF ALKALOIDS EXTRACTED IN THE WISTAR ALBINO MICE

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Background: *Peganum harmala* L. which belongs to the family of Zygophyllaceae, distributed mainly in the Mediterranean region, also found in Central Asia, North Africa and also cultivated in America and Australia. It is rich in alkaloids of type β -carboline. **Aims:** The objective of this work is insufficient information on the study of plant's *P. harmala* that grows in eastern Algeria, we examined phytochemical to detect secondary metabolites and determine the level of alkaloids in all the different parts of the plant, and record clinical observations and calculating the value of the LD50 of total alkaloids from seeds (TAS) by intraperitoneal route in the case of acute toxicity in the mice. **Methods:** Phytochemical tests were performed on different extracts prepared from each sample dry powder of the roots, leaves, stems, flowers, fruits, and seeds, using two solvents of different polarities: water and ethanol. The extract of (TAS) of *P. harmala* to be tested is dissolved in distilled water and administered at different doses intraperitoneally in a dose per group. the animals were observed 30 min after dosing, followed by hourly observation for 8h and once a day for the next 14 days. The LD₅₀ was determined according to Probit method (method of least squares, method Finney) using the [Software StatPlus® Professional] **Results:** The results showed the presence of certain chemical compounds such as alkaloids, flavonoids, saponins, reducing compounds, tannins and volatile oils in all parts of the plant. Triterpenes or sterols and anthraquinones were present only in fruits and seeds. A total absence of coumarins and cardenolides was recorded in all parts of the plant. The quantitative

extraction of alkaloids by the titration method showed that the seeds contain the highest proportion of alkaloids (3.94%). Study of the acute toxicity of total alkaloids from seeds (TAS) of male Albino-Wister mice by the intraperitoneal route showed that the alkaloid is a moderately toxic substance (lethal dose 50%: 350 mg / kg BW). Observation of clinical changes such as convulsion, agitation, tachycardia, shortness of breath, drowsiness, a decrease in locomotor activity, and anorexia, during the treatment period (14 days) which confirms the hypothesis that alkaloids have an effect on the central nervous and respiratory systems. **Conclusions:** The phytochemical study revealed the presence of major bioactive chemical constituents in different extracts of *P. harmala*. The plant under investigation can be a potential source of useful drugs. However, further studies are required to isolate the pure active principal from the crude plant extracts for proper drug development. The highest rate of crude alkaloids was recorded with seeds compared to other parties. TAS administered intraperitoneally is moderately toxic. The study of the effects of (TAS) on the central nervous system and the respiratory system is also of interest. This plant is commonly used in traditional medicine, deserves to be used with caution.

Keywords: *Peganum harmala*, phytochemical, alkaloids, acute toxicity, Algeria.

042

ELIMINATION OF CONGO RED FROM WATER BY ADSORPTION ON JUJUBE STONE

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Background: The pollution due to the rejections of the textile industry has always been a major problem threatening our society. Commercial activated carbon has been the most preferred adsorbent for the removal of these pollutants; however, its use has declined considerably due to its high price, which has led many researchers to study the possibility of replacing it with natural resources. Exploitation of agricultural products has been widely studied as an alternative for the low-cost elimination of various pollutants. **The aim** of our work is to study the ability of *jujube stones* to remove the Congo red dye from aqueous solutions. **Methods:** *Jujube stones* used in this study were collected from Bouïra, Algeria. The stones were washed and crushed. Then, they were dried at 60°C and were sieved to <100 µm size. The surface structure of the selected *jujube stones* was characterized by various physicochemical methods. **Results:** The influence of the reaction parameters such as the adsorbent mass, the pH, the initial concentration of the adsorbate, the particle size

has been studied. The results showed that the optimum pH for a maximum adsorption of Congo red was 2. A mass of *jujube stones* of 2g /L allowed a total elimination of the dye at 20 mg/l. the kinetic of sorption was well described by pseudo-second-order modeling. The adsorption of Congo red was well described by both Langmuir and Freundlich isotherm models. **Conclusions:** These results showed that *Jujube stones* could be considered for application as a potential sorbent for the removal of dyes from wastewaters.

Keywords: Congo red; dyes, *Jujube stones*; Sorption isotherms; Sorption kinetics.

043

WATERBIRDS DIVERSITY IN RAMSAR SITE THE GUERBES-SANHADJA COMPLEX (STUDY CASE OF GARAET HADJ TAHAR): PHENOLOGY AND SPATIAL OCCUPATION

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Background: Garaet Hadj Tahar (36 ° 51'50 " N, 07 ° 15'57 'E) is a permanent freshwater lake located in the commune of Ben Azouz, the Skikda district (Northeast Algeria). Covering an area of 112 ha, this natural site is home to a remarkable flora and fauna. **Aims and methods:** The objective of this study, which took place between October 2011 and October 2012, is to make an inventory of the bird populations that winter in this water body. **Results:** the results show a high diversity of birds in this ecosystem, in fact, we observed eight taxa and 26 species. The main taxa were the ANATIDAE represented by 11 species and the most abundant taxa were the RALLIDAE which reached 1000 individuals.

Keywords: Garaet Hadj Tahar, inventory, avian population, northeast of Algeria.

044

ACTIVITY OF A JUVENILE HORMONE ANALOG (PYRIPROXYFEN) ON DROSOPHILA MELANOGASTER: TOXICITY AND EFFECTS ON THE DEVELOPMENT

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Background: Conventional pesticides with high persistence, used to control various pests for a long time have caused toxic effects on humans and environment. Novel alternatives compounds named Insect Growth Regulator (IGRs) with lower risk and more selective action have been developed. **Aims:** The present study aims to evaluate the toxicity of pyriproxyfen, a juvenile hormone analog (JHA), using *Drosophila melanogaster* as a biological model system. **Methods:** The compound was evaluated topically (1 µl / insect) at different doses (0.01; 0.1; 0.5; 1, and 2 ng/insect) on the third instar larvae in order to determine the percentage inhibition of adult emergence (ID₅₀). In the second series of experiments, the ID₅₀ (0,29 ng) obtained was evaluated on the duration of the pupal instars and the growth (weight and size) of pupae and adults. **Results:** Results showed that insecticide prolonged significantly the duration of pupal development and decreased the pupal and adults weight and size. **Conclusions:** Pyriproxyfen affects negatively the development of *D. melanogaster* probably by disrupting the hormonal balance that controls the development processes. A better understanding of the interference between the different hormones of development will optimize the use of IGRs in integrated pest management programs.

Keywords: *Drosophila melanogaster*, Pyriproxyfen, Toxicity, Growth, Development.

045

EFFECTS OF AZADIRACTIN IN SIMPLE AND COMBINED TREATMENT WITH 20-HYDROXYECDYSONE IN *DROSOPHILA MELANOGASTER* (DIPTERA): IMPACT ON VITELLOGENESIS

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Background: Natural pesticides, an alternative to conventional insecticides, constitute an element of response to sustainable development policy in relation to their low ecotoxicological impact. Azadirachtin, derived from the neem tree *Azadirachta indica* is known as an antagonist of juvenile hormone (JH) and 20-hydroxyecdysone (20E), but its mechanism of action remains to be clarified. **Aims:** The present study aims to evaluate the effects of azadirachtin on vitellogenins, as a reprotoxic biomarker, in model species in toxicology, *Drosophila melanogaster*. **Methods:** For bioassays, various doses ranging from 0.5 to 4.5 µg were applied topically on newly emerged pupae and the inhibition doses (ID₂₅ and ID₅₀) of adult emergence were determined. In the second series of experiments, Azadirachtin was tested on newly ecdysed pupae in simple (ID₂₅ and ID₅₀) and combined (ID₅₀) treatment with the 20E (0.25 and 0.50 µg) 24 or 48 hours after azadirachtin treatment. The effects of the biopesticide were evaluated

on fat body and ovaries vitellogenins content. **Results:** Azadirachtin applied topically on newly ecdysed pupae, causes an inhibition of adult emergence with a dose-response effect and ID₂₅ and ID₅₀ obtained from the dose-response curves are respectively of 0.59 and 1.10 µg. The simple treatment with azadirachtin induces, in adult females of *D. melanogaster*, a decrease in vitellogenins content, in fat body and ovaries at the two tested doses. The combined treatment relatively restores the physiological values of vitellogenins content. This biological response varies as a function of the doses and the moment of 20E application. **Conclusions:** The 20E seems to compensate the depressive effects induced by azadirachtin on *D. melanogaster*. The antagonist activity of the pesticide on the vitellogenins seems to be mainly related to the signaling pathway of ecdysteroids. Concomitant applications of HJ could bring more details on the mode of action of this pesticide.

Keywords: *Drosophila melanogaster*, Azadirachtin, Toxicity, 20-Hydroxyecdysone, Vitellogenesis.

046

DIVERSITY OF MYCOFLORA ASSOCIATED WITH WHEAT AND BARLEY GRAINS FROM BOUIRA (ALGERIA)

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Background: Several fungi can be found on cereal grains as external contaminants. Grains are naturally in contact with fungal spores before, during, and after harvest, during transport and storage Fungal growth is governed by many physicochemical parameters, including the amount of free water (water activity), temperature, the presence of oxygen, the nature of the substrate, and the pH. **Aims:** The objective of this work is to isolate and identify the different microscopic fungi from wheat and barley grains collected from different regions of Bouira. **Methods:** A total of 33 samples of durum wheat, soft wheat and barley are collected from 14 different regions of Bouira. For isolation two semi-selective culture media are used, for characterization of isolated fungi, PDA and SNA media are used. **Results:** the results showed that the degree of colonization of the grains by the fungi is 69.88%, 79.34% and 85.26% for soft wheat, durum wheat, and barley respectively. This study showed a great diversity of the mycoflora associated with the three types of grains, and allowed to identify 17 fungal genera which are *Alternaria*, *Aspergillus*, *Aureobasidium*, *Chaetomium*, *Cladosporium*, *Epicoccum*, *Fusarium*, *Helminthosporium*, *Microsporium*, *Penicillium*, *Pithomyces*, *Rhizopus*, *Stemphylium*, *Stachybotrys*, *Trichoderma*, *Trichophyton*, and *Ulocladium*. **Conclusions** This study shows the richness of microscopic fungi associated to these grains with a dominance of the *Alternaria* genus in all samples.

Keywords: Microscopic fungi, Cereals, Isolation, Identification, Diversity.

047

IMPACT OF CLIMATE CHANGE ON THE POTENTIAL DISTRIBUTION OF THE SPECIES *SALAMANDRA ALGIRA* (BEDRIAGA 1883) IN ALGERIA

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Background: *Salamandra algira* is an amphibian present in northern Morocco and Algeria. Despite several scientific works which provided data mainly on the distribution and phylogeography of *S. algira* in Algeria, the species remains understudied, it is encountered in the mountain ranges of the north near the coastal chain. **Aims:** This study aims to model the potential distribution of *Salamandra algira* in Algeria in order to determine which variables condition the extent of its distribution range and to inform us about the ecological preferences of the species. In addition, this study presents the first work dealing with the impact of climate change on the potential distribution of the species in Algeria by 2070. **Methods:** To do this, we opted for Species Distribution Models (SDM) method with the Maxent algorithm, using 19 bioclimatic variables obtained from WorldClim. We also used a digital terrain model and altitude data as well as 43 occurrence sites of the species covering the most important populations known from Algeria. This allowed us to test the contribution of the main advantage of the use of ecological niche models. **Results:** The results showed that the bioclimatic variable BIO19 (precipitation of the coldest quarter) contributed most to the construction of the present and future models. This is explained by the reproduction mode of the species (ovoviviparous) which is dependent on water bodies that are directly created or fed by precipitation. The current model has shown an area potentially favorable for the species from the Blidian Atlas until the wilaya of El Taref in the far northeastern Algeria. The future projection shows a severe reduction in the area potentially favorable to the species in Algeria. This reduction is explained by the disturbance of the precipitation regime that will affect North Africa in general and particularly Algeria.

Keywords: *Salamandra algira*, Algeria, Maxent, Ecological Niches.

048

PRODUCTION THE FUNGAL ENZYMES OF TYPE LIGNOCELLULOLYTIC BY SOLID STATE FERMENTATION OF THE COPRODUCED AGRO-INDUSTRIAL

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Background: The lignocellulosic biomass institutes a practically inexhaustible renewable source of energy and little exploited this day, it is essentially established by the cellulose, the hemicellulose, and the lignin. Its hydrolysis is carried by cellulases, hemicellulase, and ligninases, the molds are considered the best producers of these enzymes because of their cellulases natural endowed with a capacity of saccharification complete of the lignocellulosic biomass. **Aims:** This work is interested in the exploitation of the lignocellulosic coproducts to produce lignocellulolytic enzymes of xylanases type. **Methods:** two strains of molds of the genre *Trichoderma* (AP) and *Aspergillus* (BG) are isolated from samples taken in the area of Akbou (Algeria). The 02 strains are used to carry the solid-state fermentation (SSF) with coproduced lignocellulosics such as the wheat straw moistened in 40 and 80 % and the wheat bran moistened in 40 %. The kinetics of fermentation are carried of 1st up to the 8th in the daytime of fermentation. **Results:** The maximal activities were recorded) in the 2nd day of culture on both substrates with values of 208,578: 497,895 and 551,141 UI / ml for the straw and the wheat bran moistened in 40 % and the straw wheat moistened in 80 %. respectively to the strain *Aspergillus* sp (BG). On the other hand, the strain *Trichoderma* sp (AP) reveals a maximal activity of 454,967 UI / ml in the 6th day for the wheat bran Moistened in 40 % and of 127,609: 211,509 UI / ml in the 6th and 2nd days for the straw wheat moistened in 40% and 80 % respectively. **Conclusion:** This study shows that strain **BG** presents the maximum of Xylanases activity on the straw and the wheat bran, the latter could prove to be a potential candidate with an exploitation and an industrial application of the xylanases which it produces.

Keywords: Coproduces, Moulds, Xylanases, Activities, Solid State Fermentation.

049

EVALUATION OF THE ANTIMITOTIC ACTIVITY OF THE FOLIAR EXTRACT OF PEGANUM HARMALA FROM DAYATE AIAT (LAGHOUE, ALGERIA)

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Background: Algeria, because of its geographical position, presents a wide range of bioclimatic stages, inducing a biodiversity of plants used as condiments, natural foods or for therapeutic purposes. Medicinal plants are an inexhaustible source of bioactive molecules: secondary metabolites. These are accumulated in different organs of the plant namely root, stem, leaf and seed. They generate biological activities: antibacterial, antifungal, antioxidant, anti-inflammatory, antimitotic, etc. **Aims:** It is with this in mind that we are interested in a spontaneous plant from the Dayas region: *Peganum harmala*. Our interest in this work focused on the demonstration of the antimitotic activity of the leaf extract of this species. **Methods:** Sampling was carried out at Dayate Aiat, Timzerth region, Laghouat wilaya in April 2015. The ethanolic extract of the leaf powder was made according to the protocol of Darabpour et al. (2011). The antimitotic activity of the latter was carried out according to the protocol of Shweta et al. (2012) on *Allium cepa*. **Results:** Mitotic indices were calculated. ANOVA performed between the untreated control and colchicine taken as standard showed a highly significant difference between these two measures ($P < 0.01$). The difference is also highly significant between this same control and the leaf extract of *Peganum harmala* ($P < 0.01$). However, a significant difference is noted between colchicine and ethanolic extract of leaf powder ($P < 0.05$), reflecting different antimitotic activity with chromosomal and cellular abnormalities. **Conclusions:** The secondary metabolites of *Peganum harmala* leaves have antimitotic activity inducing inhibition of cell division.

Keywords: *Peganum harmala*, leaves, antimitotic activity, Laghouat, bioactive molecules.

050

ASSESSMENT OF TRACE ELEMENTS IN AGRICULTURAL SOILS UNDER GREENHOUSE IN JIJEL (ALGERIA)

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Background: Soil pollution in Algeria is not well investigated and remains to be explored. Ignorance of the extent, distribution, and degree of soil pollution make it impossible adequate targeting prevention measures which is important to identify the polluted areas to develop strategies against this pollution. **Aims:** to assess the level of trace elements in agricultural soil (under greenhouse) in Jijel city (Algeria) and compare between two methods of extraction. **Methods:** 8 sites were collected and analyzed with two different methods of extraction; Aqua regia extraction (AR) and Fluorhydric acid (HF). Thus, the analysis of the three elements studied (Pb, Cd, and Zn) was carried out by atomic absorption spectrometry. **Results:** the results

obtained show that there is a significant difference between the two extraction methods with a higher yield than that of Hydrofluoric acid. The concentration of elements (Pb, Cd, Zn) extracted by aqua regia does not exceed the standards set by the WHO, however, some sites are slightly higher than standards with a significant variation ($p < 0.05$) between the sites studied. The levels of these elements inside and outside greenhouses vary from one site to another, depending on several factors that influence the concentration and trace element distribution in the soil such as physicochemical parameters (pH, CE, CEC, organic matter ...), the natural contents of these elements, the climatic factors... **Conclusion:** this study has allowed us to evaluate the concentration of heavy metals in different agricultural soils of Jijel city (Algeria), it is very interesting to continue this study over time and with other elements in order to monitor any contamination or pollution of the soil by the latter.

Keywords: Trace elements, Pollution, Contamination, Agricultural soil, Jijel.

051

MALE MEIOSIS, CHROMOSOME NUMBERS AND POLLEN FERTILITY OF ALLIUM TRICHOCNEMIS J. GAY (AMARYLLIDACEAE) AND ERODIUM BATTANDIERANUM ROUY (GERANIACEAE)

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Background: *Allium trichocnemis* and *Erodium battandieranum* are two Algerian endemic species, both of phylogenetic value. The former is restricted to Mount Gouraya of Bejaia, and the latter is present all over Babour Mountains and neighborhoods (Northeastern Algeria). They are both cytotaxonomically understudied. **Aims:** To determine the chromosome numbers of the two taxa using male meiosis, observe pollen grains shape and estimate pollen viability rates. **Methods:** Flower buds at all stages of development were *in situ* fixed in ethanol-chloroform-acetic acid (6:3:1). Lactopropionic orcein and cotton blue were used for chromosome and pollen grains staining respectively. Light microscopy was used for observation and photography. **Results:** Metaphase I plates showed 16 bivalents corresponding to $2n = 4x = 32$ chromosomes ($x = 8$) for *A. trichocnemis*. The strict bivalent pairing observed for this cytotype suggests an allotetraploid origin. Its pollen grains were mono-apertured, half-moon shaped with roundish ends. Pollen fertility rates varied from 84.10% to 98.72% with a mean value of $93.60 \pm 3.15\%$. As to *E. battandieranum*, anaphase I and metaphase II plates showed $2n = 2x = 20$ chromosomes ($x = 10$). Pollen grains of this species were triplicate and subspherical in shape; the pollen fertility rates oscillated between 87.10% and 97.79% with an average value of $93.10 \pm 3.61\%$.

Conclusions: *A. trichocnemis* is a tetraploid ($2n = 4x = 32$) with monoporate, half-moon shaped pollen grains, and 84.10-98.72% pollen fertility. *E. battandieranum* is a diploid ($2n = 2x = 20$) with triporate, subspherical pollen grains, and 87.10-97.79% pollen fertility.

Keywords: *Allium trichocnemis*, *Erodium battandieranum*, male meiosis, Chromosome numbers, Pollen fertility.

052

ORIGINS AND THERAPEUTIC FAILURES OF MICROBIAL MAMMITES WITHIN THE WILAYA OF BOUIRA

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Background: within the framework of the Écoantibio2017 plan, all the actors of the milk of sector they organize themselves to improve the fight plans against the mammites and their prevention in order to reduce the quantities of antibiotics used and to limit the antibiotic resistance which develops quickly, having an origin of the therapeutic failures. **Aims:** With regard to certain indicators and in order to determine best the risks which are related to the consumption of the raw milk of cow on Bouira, of the milk mammitic samples, were taken on 20 dairies in order to analyze and to make known causal bacteriological agent, one notes 85% of case from the staphylococci mammites and 95% streptococci mammites. Moreover, the analysis of milk coming from the cows reached of mammites treated not answering the treatments, on 22 analyzed, 17 farms present a positive culture with a rate therapeutic of 77.27% failures including 35.29% by the *Staphylococcus aureus* resisting penicillin and tetracyclines, 35.28% for the enterobacteria and 5.88% for the streptococci resist to Tetracyclines. **Methods:** Insulation and identification of the species of germs were carried out according to the protocol recommended by AFNOR ISO 16140-2. **Results:** The *Staphylococcus* is the germ more isolated with a percentage 58.81% and 35.29%, obtained according to our followed studies by 35.28% by the enterobacteria, the staphylococci with the negative coagulase with (23.52%), resistance to antibiotics are particularly in Tetracyclines with 60.86% and penicillins with 26.08%. **Conclusions:** It proves that the importance of the bacterial load of the raw milk taken in bovine exploitations of Bouira dairy is only one continuation of the contaminations related to mammites and bad hygienic conditions of the medium. The good practices of hygiene, the curative treatments of mammites based on antibiograms and the microfiltration of milk become imperative, to ensure the healthiness of all the line production of raw milk.

Keywords: raw milk, mammites, good practices of hygiene, antibiogram, microfiltration, antibiotic resistance.

053

NODULATION DIAGNOSIS TO ASSESS EFFECTIVENESS IN PHOSPHOR USE OF COWPEA (*VIGNA UNGUICULATA* L. WALP.) FOR SYMBIOTIC NITROGEN FIXATION UNDER MEDITERRANEAN CONDITIONS

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Background: The symbiotic fixation of atmospheric nitrogen by legume-nodulating rhizobia is an alternative to improve crop production in a sustainable agriculture (1). However, some abiotic constraints such as the low availability of phosphorus in soils may limit the efficiency in the use of this biological symbiosis (SNF) (2, 3). **Aims:** Assessing the efficiency in the use of the rhizobial symbiosis for cowpea (*Vigna unguiculata* L. Wallp.). **Methods:** Six genotypes, namely G55, G41, G76, G32, G3, and G18 were evaluated in farmer's fields through a nodular diagnosis in 20 sites of an agro-ecosystem under Mediterranean climate in Algeria. **Results:** Spatial variability of nodulation was observed as a dependence of soil characteristics: in soils with high N content, the nodulation was inhibited; in other soils, could be established a significant positive relationship of nodulation and P available content in soil with all genotypes tested; a positive significant relationship of growth as a function of nodulation was shown with all genotypes tested. A significant difference in this relationship was obtained between the most contrasting genotypes in the efficiency in the use of rhizobial symbiosis, namely G55 and G18 as the most and least efficient, respectively. **Conclusions:** It is concluded that the assessment of cowpea for SNF in the field multilocal-test can select genotypic EUSR for Low-P soils.

Keywords: Cowpea, Phosphor, Nitrogen Symbiotic Fixation, Mediterranean Agroecosystem.

054

VALORIZATION OF A LOCAL LEGUME: *HEDYSARUM FLEXUOSUM*

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Background: So far, dehydrated alfalfa (*Medicago sativa*) has been the most widely used source of fiber in rabbit feed, despite its high price, in particular, because of its cultural requirements. Moreover, its dehydration causes additional costs. **Aims:** The objective of the trial is to study the integration of local resources in rabbit feed pellet. The search for local fiber sources is thus an alternative for the partial or total substitution of alfalfa. *Sulla flexuosa* (*Hedysarum flexuosum*), a legume endemic to North Africa belonging to the genus *Hedysarum* is a spontaneous and biennial plant. It has the ability to grow in a wide range of soil types and tolerance to dry conditions. It has yields of up to 16 tons DM/ha per season and suggests to this species a very important role in animal production in dry zones in particular. *Hedysarum* species have of major agronomic and economic interest. Although its virtues have been known for a very long time in the region of Kabylia (Algeria), it is consumed by humans, in particular, this species has not had the merited interest in animal productions. **Methods:** Three feeds (0, 15, and 30 of *sulla*) were fed to ninety rabbits. This legume has already aroused strong interest in different countries (Italy, Tunisia, Australia, New Zealand, etc.), especially in ruminant feeding. However, it remains little used in the strategy of integration of local resources in rabbit feed pellet. **Results:** Daily weight gain was 38g/d and feed conversion ratio was 3.14 in this trial. **Conclusions:** Firstly, this study will allow the valorization of this melliferous legume in the study area and on the other hand aim to reduce the cost price of the rabbit feed, the key to promote this animal sector and contribute to reducing the price of rabbit meat.

Keywords: *Sulla*, local sources, valorization, rabbit breeding

055

EFFECT OF WATER STRESS ON SOME MORPHO-PHYSIOLOGICAL PARAMETERS OF THE APPLE-ROOTSTOCKS MALUS DOMESTICA BORKH. CULTIVAR MM.106

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Water stress is one of the most important environmental effects that affects most growths and physiological aspects of plants and causes damage to agricultural products each year. The apple tree is one of those species cultivated in semi-arid regions and exposed to water stress during its annual cycle. This study was undertaken to identify the morphological and physiological changes compared to the witness in the MM106 rootstock of the apple tree *Malus*

domestica Borkh, under the effect of 4 levels of water stress (100% Hcc (witness), 80, 60, and 50% Hcc). The effect of water stress caused a significant reduction in growth parameters in plants such as fresh and dry weights of different organs (Root, Stems, and Leaves) depending on the different levels including the number of leaves, sympodial growth and the relative water content in all plants. Generally, the effect of the level of watering with a frequency of 80% Hcc was not significant. However, a very highly significant impact is observed in the various parameters measured at the level of 60% and 50% Hcc with respect to the witness. Despite these results, the MM.106 rootstocks, even under severe stress, did not show wilting or dieback after 60 days of application.

Keywords: MM106 rootstock, *Malus domestica* Borkh, water stress, tolerance, morpho physiological parameters, semi-arid zones.

056

MANAGEMENT OF WATER RESOURCES IN THE CONTEXT OF CLIMATE CHANGE. THE CASE OF OUED OUAHRANE BASIN. ALGERIA

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A good mastery of water resources management in an area characterized by water scarcity aggravated by drought on the one hand and population growth on the other requires a better understanding of the relationship between variability climate change and its impacts on the availability of water resources. It is in this perspective that this study was carried out to characterize the temporal variability of the hydrometeorological series and to identify trends in the rainfall-flow relationship in the Oued Ouahrane watershed, a sub - Basin of Cheliff, Located in the North-West of Algeria. The hydrological behavior of the Oued Ouahrane sub-basin is assessed by analyzing the rain-flow relationship through the use of the global conceptual model (GR2M model) in order to predict and anticipate the risks (Flood and drought prevention). The use of statistical tests indicates a change in the precipitation regime, which is reflected in a downward trend of 28% by the end of the 1970s and a reduction in flows that exceeds 46% with a break observed at the beginning of the 1980s. The sharp decline in rainfall in this region during the decades 1980-2000 has had a significant impact on hydrology and economics. The scarcity of water resources, drought and irregular spatiotemporal distribution of rainfall can generate climatic and economic crises and very often also social instability. In this respect, the study region, which has an economy based on rain-fed agriculture, appears to be a particularly sensitive region. From these findings, it seems necessary to the manager to think to

better manage an ever-decreasing water resource in the face of an ever-increasing demand.

Keywords: Drought, management, Oued Ouahrane, water resource, modeling.

057

EFFECT OF WATER STRESS ON THE VARIATION OF THE RELATIVE WATER CONTENT, CELL INTEGRITY FOR VARIETIES OF DURUM WHEAT (TRITICUM DURUM DESF.) UNDER SEMI-ARID CONDITIONS

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The experiment was conducted during the 2013/2014 cropping year, on the site of the Experimental Station of the Technical Institute of Field Crops (ITGC, Setif). It is part of the work program of the National Center for the Control and Certification of Seeds and Seedlings (CNCC, Setif). Five varieties of durum wheat (*Triticum durum* Desf.) From a selection CIMMYT / ICARDA and local varieties from the (ITGC, Setif). These genotypes are Oued-Zenati, Djenah Khetifa, Megress, Wah, and MBB. The seed comes from (CNCC) Sétif. Variables measured are cell integrity and relative water content. The collected data were analyzed with the software Co Stat 6. The variance analysis reflects a significant differential effect in genotypes so membrane tolerance varies (IC%) from 55.4% for Djenah. Khetifa to 80.4% for MBB which is more vulnerable to stress. Regarding the relative water content (TRE), the interaction genotypes x dates indicates that at the heading stage, the TRE found in the WAHA variety is 63.11%, however, D. Khetifa has identified itself by 81.8%. At the flowering stage. So this parameter reflects a measure of the water deficit of the leaf water.

Keywords: *Triticum durum* Desf., Water stress, Tolerance, relative water content, varieties.

058

ASSESSING THE POTENTIAL OF PHYTOREMEDIATION OF HEAVY METALS-CONTAMINATED SOILS BY TWO WILLOW SPECIES

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Phytoextraction involves the uptake of contaminants and their translocation to harvestable plant fractions. This study assesses the potential for use in phytoextraction of Pb, Zn, and Cd from polluted soils of two willow species, *Salix viminalis* and *Salix dasyclados*, using pot experiments with a range of four soils with different metal concentrations; Pb (111, 141, 192, and 249 mg/kg), Zn (778.6, 1482, 2734, and 4411 mg/kg) and Cd (3.00, 5.03, 9.14, and 16.07 mg/kg). *Salix viminalis* was found to accumulate Zn and Cd with a higher concentration than *S. dasyclados*, but neither species accumulated Pb to any appreciable degree. However, *S. dasyclados* removed more Cd by mass in all four soils and more Zn by mass in the two more contaminated soils, with equal amounts being extracted from the two lesser contaminated soils. An assessment of the suitability of willow species in this role, with regard to wider aspects involved such as the use of resultant biomass and/or waste management, revealed good potential. Willows are fast growing, grow vigorously from coppiced stumps and have extensive root systems. Their use in bioenergy production through pyrolysis or combustion, coupled with flue gas screening and the possibility of metal recovery, also shows promising potential.

Keywords: phytoremediation, Heavy metals, polluted soil, *Salix viminalis*, *Salix dasyclados*.

059

EVOLUTION OF THE VARROA DESTRUCTOR POPULATION AT THE LOCAL APIS MELLIFERA INTERMISSA BEE COLONIES IN THE TIZI-OUZOU REGION

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Varroasis is a very dangerous disease of the honey bee *Apis mellifera*. It causes the weakening and the collapse of the colonies. This disease is caused by the *Varroa destructor* mite that parasitizes both brood and adult bees. However,

understanding the host-parasite relationship is of great interest for developing a better control strategy. It is in this context that our work aims to study the evolution of the *Varroa destructor* population in the colonies of the local bee *Apis mellifera intermissa* in the region of Tizi-Ouzou. Twenty hives equipped with greasy diapers were visited every three weeks, from April until November. During these visits, we studied the development of varroa by determining the brood infestation rate (BIR), the adult bee infestation rate (AIR) and the natural mortality of this mite. Varroa mite in brood reached a maximum of 1994,15 individuals in July, while TIC has the highest average rate in August at 15.90%. Whereas the phoretic varroa is met much more in autumn with an average of 941.46 varroa and the observed TIA is 9.31%. In this period the colonies have a narrow number of capped brood and open cells. The results obtained show that the life cycle of varroa is linked to that of its host. It is closely related to the seasonal and internal conditions of each colony.

Keywords: Domestic honey bee, Varroa destructor, parasite, evolution.

060

CONTRIBUTION TO THE CHARACTERIZATION OF STORMWATER. VALUATION AND REUSE

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The recovery and the reuse of stormwaters seem to present interesting potentialities. We believed for a long time that the stormwaters were without risk for the environment. However, several studies prove the opposite and consider it as an important vector of transport of pollutants. Water quality depends on: the nature of surfaces of streaming, the maintenance of these, the frequency of the streaming, the contaminants in the air (sulfur dioxide, ammonia, dioxide nitrogen...). The objective of this study aims at the characterization of the quality of stormwaters recovered on a catchment area of Algiers. The characterization concerned the analysis of physicochemical parameters such as pH, conductivity, temperature, TSS, and the ions: sulfate, nitrate, nitrite, ammonium, potassium, calcium, magnesium, and sodium. The results of the physicochemical analyses of pollution parameters showed that the content of the latter indicates a considerable degree of pollution. The latter causes adverse effects with short or long-term appearing on the various compartments of the ecosystem and even on a human scale. In the term of this study, it appears that the quality of stormwaters is improved by making an aerobic biological treatment. The analyses were carried by UV-Visible spectrophotometry and atomic absorption.

Keywords: Stormwater, Pollutants, Pollution parameters, Reuse.

061

ISOLATION, CHARACTERIZATION, AND INVESTIGATION OF THE RHIZOBACTERIA ISOLATED FROM ALGERIAN GROWING WILD ARGAN IMPACT ON WHEAT GERMINATION AND GROWTH

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Background: Using microorganisms as inoculants in agriculture is the most promising approach to improve cultivated plants production and yield. We start our study by the isolation of rhizobacteria from the rhizosphere of the argan tree from several regions in Algeria than the investigation of their power to boost the plant's growth by the determination of AIA after purifying our isolates on King B medium. This step allowed us to select 41 bacteria approving concentrations of AIA higher than 13.5 µg/ml among 78 isolates. The highest rate of AIA was 56µg/ml. The productions of HCN and NH₃ were also measured as related activities to PGPRs. As a second part, we moved to the application of our isolated PGPRs on seeds planting and the exploration of their effects on plant growth by the germination test on the varieties SIMITO and ARZ representing durum and soft wheat respectively. The germination rates were 47%, 55%, 25%, 56%, 68%, 64%, and 36% varying with bacteria. Finally, a statistical study has clearly shown the power of our PGPRs on wheat growth with very satisfactory results. One of our bacteria gave the most interesting result giving plants with an average of dry root weight of 125 ± 4.08 mg leaves a length of 110 ± 29.15 cm, and rods length of 100 ± 33.02 cm. These results are very much higher than the control.

Keywords: AIA, Germination test, Growth test, PGPR (Plant Growth Promoting Rhizobacteria), The Argan.

062

EXTRACTION OF ZINC (II) BY AN IMPREGNATED AMBERLITE XAD 16 RESIN WITH AN ORGANOPHORIC ACID DEHPA IN THE PRESENCE OF SURFACTANT

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The industrial wastes of heavy metals constitute a serious problem of the bound environment, in particular with the toxicity of certain chemical elements. So the selective elimination of the water-soluble metal cations represents an important stake for the chemistry of the environment. For this purpose, several methods of purification were proposed for economic and ecological reasons (the recovery of heavy metals as an example). Industry always seeks replacements with the traditional techniques of separation and of recovery of metals like the liquid-liquid extraction and exchanging resins of ions; this led to the development of new technologies such as separation by a membrane, electrodialysis, and selective adsorption. To be able to eliminate the traces of these heavy metals, the liquid-liquid extraction is not sufficient. For economic reasons, it is necessary to improve its kinetic, physical, and thermodynamic performances while exploiting a certain number of parameters as the interface of exchange and the cycles of treatments. An innovating technique allowing these performances was introduced by Warchawsky and Coll, in 1970, called impregnated resins. In order to improve the extraction of metal ions in aqueous solution by the resins, we oriented our work towards the impregnation of Amberlite resins by an organophosphorus extractant in the presence of an anionic surfactant: Sodium Dodecyl Sulfate (SDS), at its critical micellar concentration 4.10^{-3} M. The resins obtained after modification were characterized by infrared spectroscopy (IR), scanning electron microscopy (SEM) and textural analysis (BET) in order to confirm the impregnation of XAD16 with DEHPA organophosphoric acid in the presence of surfactant. The impregnation showed that the XAD16 resin is saturated after a DEHPA concentration of order 0.15 g /ml with a retention capacity of 0.634 g / g IR. The impregnated Amberlite XAD16 resin is subsequently used in the extraction of Zinc (II) metal ions, the optimization of the extraction parameters (contact time, pH of the aqueous solution, stirring speed and concentration of DEHPA) by the XAD16-DEHPA matrix, made it possible to reach a higher extraction percentage of 99%. The formula of the extraction complex obtained is determined by the slope method, its form is $Zn R_2$ (HR).

Keywords: Amberlite XAD16, DEHPA, surfactant SDS, impregnated resin, metal extraction, Zinc.
