

Abstracts of Research papers volume 22 Number 2
(August 2018)

TABLE OF CONTENTS

ENGLISH TITLES

AGRICULTURE SCIENCES

**Effect of Pre-soaking by distilled water on seeds germination of black seeds
(*Nigella sativa* L.) under salinity stress**

E. J. AL-Sanabani; F. A. Alhadi; K. N. Al-Amary and M. A. Hussain

ANIMAL PRODUCTION

A comparative study of reproductive performance of *Ross 308* and *Marshall R Plus* Broiler Breeder females strain stocks during production period

Mohammed Alzawqari, Hani Al-Baadani, Abdullah Alsobayel and Saddam Al-Baadani

CHEMISTRY

Chemical composition, total phenol contents, antioxidant and antimicrobial activities of propolis produced by honeybee *Apis mellifera jemenitica* from *Ficus palmata* Forssk in Al-Baha, Saudi Arabia.

Noofal I. M. Bayaqoob, Ahmed I. Rushdi and Ahmad A. Al-Ghamdi

MARINE SCIENCES

Surface architecture of the mouth cavity in a carnivorous fish *Scomber japonicus* (Houttuyn, 1782) (Scombridae)

Kamal Ahmed Baaom, Abdulla Ahmed Basmidi and Manal Haj Obbed

MATHEMATICS

Study in P^h – Birecurrent Finsler space

Fahmi Yaseen Abdo Qasem and Amani Mohammed Abdullah Hanballa

Analysis for Cartan's fourth curvature Tensor in Finsler space

Fahmi Yaseen Abdo Qasem and Kamal Salem Naji Nasr

MEDICINE

Analysis requests for sonography examination made by emergency residents in Algamhuria Modern General Hospital- Aden -Yemen

Al-Ass Abdulmajed Alawi and Salem H. Alshabahi

Prevalence of diabetes mellitus among Non-Hodgkin's lymphoma patients admitted in Al-Sadqa Teaching Hospital during 2017

Reema Khaled A.Al-Horaibi

PHYSICS

Calculation of potential energy of molecules and kinetic energy of electrons on Slater functions basis

Tawfik Mahmood Mohammed Ali

SHORT COMMUNICATION

MEDICINE

Methemoglobinemia (Case report)

AL Kubati AK Sallam

ARABIC TITLES

AGRICULTURE SCIENCES

A survey of weeds in some farms at AL- Qatten Directorate Hadramout Governorate

Mahroos Abdulla Bahawireth and Yaser Saeed Bahurmuz

Effect of Licorice (*Glycyrrhiza glabra* L.) extract and powder on growth of onion (*Allium cepa* L. cv. Bafatiem)

Nora Mohammed Al-Saqaf, Mohammed Abdullah Hussein and Othman Saad Al-Hawshabi

Evaluation of some maize cultivars in different planting dates

Ziad Othman Salem , Ali El-Sayed Hamed and Ameen Mohammed Ali

Response of the vegetative growth of tomato plants (*Lycopersicon esculentum* Mill) with the foliar spraying with zinc element

Esam Ali Sadaqa and Malak Mohamed Yussef Bagash

The effect of different phosphors fertilizer levels on productivity and characteristics of Alfalfa forage (*Medicago sativa* L.)

Al-Nomir A A, Alhadi A. M, Marwan Manea . Alsaiadi. M M. Hadi. A. M and Al-Hamaty S. A

ENVIRONMENT

Estimation of heavy metals concentration in water, soil and some plants in Al-Haswah preserve - Aden -Yemen

Abdul-hakim Al-Alawi , Arafat Thabit Amer and Abdul-Rahman Alawi Bin Yahia

Quality of drinking water of Al-Ain town and its surroundings in Lewder-Bayan Governorate, Yemen

Ali Salem Omer and Fadel Ahmed Am-Dhally

Ethno- medicinal plants in Dhala District- Al-Dhala Governorate- Yemen

Ahmed Mohammed Moqubel, Abdul-Nasser A.Al-Gifri Hussein and Mohammed Abdullah

Geology

Applications of GIS for morphometric and hydrologic analysis of drainage basins of Hidibu Plan – Socotra Island

Abdulmohsen Alamry and Aydroos Qatan

PHYSICS

Strength tensile improvement of the Al alloy by reinforcing with steel fibers

Mahmoud Alasaad, Almohanad Makki and Wardan Wahhod

**Effect of adding Aluminium powder on the bending resistance properties
and fire retardant for unsaturated polyester.**

Ahmed J. Mohammed, Abdullah A. Hussein and Ibrahim K. Ibrahim

Abstracts of Research papers volume 22 Number 2 (August 2018)

ENGLISH TITLES

AGRICULTURE SCIENCES

Effect of Pre-soaking by distilled water on seeds germination of black seeds (*Nigella sativa* L.) under salinity stress

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Abstract

A laboratory experiment was conducted to study the effects of salinity and presoaking treatments on final germination percentage, days to 50% germination, and recovery percentage of *Nigella sativa* seeds. Seeds were divided into two groups and for 24h one group was presoaked in different NaCl concentrations (25, 50, 75, and 100 mM), while the other was presoaked in distilled water. They were then sown in Petri dishes and watered with salinity treatments. Results showed high significant difference between the two presoaking treatments. Final germination percentage of seeds of the first group was negatively affected where it decreased as salinity concentration increased. Only seeds at 25 mM reached to 50% of germination after ten days, while those at other concentrations failed. Results also showed that seeds of the second group were germinated well after being exposed to salinity stress. They also achieved more than 50% germination during the first five days of experiment. The recovery percentage of the un-germinated seeds of the two groups was low indicating toxic ionic effect on seed germination and viability. It was concluded that salinity effect on germination traits increases with the increase in concentration and presoaking treatment in distilled water helps seeds to reduce salinity stress.

Key words: final germination, presoaking, distilled water, *Nigellasativa*, salinity.

ANIMAL PRODUCTION

A comparative study of reproductive performance of *Ross 308* and *Marshall R Plus* Broiler Breeder females strain stocks during production period

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Abstract

This study was designed to compare the production performance of both *Ross 308* and *Marshall R Plus* broiler breeder strain, whereas the ambient temperature ranged between 7.9°C to 30.10°C. A total of 36,000 25 wks- old hens of broiler breeders *Marshall R Plus* and *Ross 308*. The hen of each strain (18000 hens) was randomly distributed to five open houses as replicates (3,600 hens per house). Fed ad libitum on balanced ration and available water according to Management Guide recommendations for each strain. Production performance percentage, such as egg production of hen housed (HH) and hen day (HD), feed intake (FI), feed conversion ratios (FCR), mortality, selected and unselected eggs for hatching, broken and a double yolk, was recorded from 26 to 57 weeks of age. The whole production period divided into eight production periods for each strain by randomized complete block design as 2 × 8 factorial arrangement of treatments. The results showed significant differences in strain, production period and their interaction on HD, HH, FI and FCR. *Ross 308* strain had higher HD and HH, lower FI and better FCR than *Marshall* Strain. Also, the strain and production period had a significant effect on the selected, unselected, broken and double yolk and mortality. *Ross 308* strain had higher selected eggs for hatching, broken and mortality and lower unselected and double yolk eggs than *Marshall* strain during the completely experimental period. It can be concluded from this study that *Ross* had better performance in all studied traits except mortality and broken eggs percentages.

Key words: Broiler Breeder, Strain, *Ross 308*, *Marshall R Plus*, Performance.

CHEMISTRY

Chemical composition, total phenol contents, antioxidant and antimicrobial activities of propolis produced by honeybee *Apis mellifera jemenitica* from *Ficus palmata* Forssk in Al-Baha, Saudi Arabia

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Abstract

Honeybee hives were setup in Feeg village of Al-Baha province- Saudi Arabia, where *Ficuspalmata* plants are dominant in the *Juniperusprocera* forest. Propolis samples were collected from these hives for over a year. The propolis samples were extracted using three different solvents including dichloromethane (DCM), mixture of dichloromethane and methanol (DCM:MeOH, v:v, 2:1) and methanol (MeOH). The chemical compositions of the different propolis extracts were determine by gas chromatography-mass spectrometry (GC-MS). The total phenol content (TPC) in each extract was quantified using the Folin-Ciocalteu method. The free radical-scavage activities (FRSA) of the various propolis extracts were measured by the method of 1,1-Diphenyl-2-picrylhydrazyl (DPPH). The chemical analysis showed that the propolis extracts of the different solvents varied in composition and contained mainly diterpenoids, triterpenoids, fatty acids, n-alkane, andn-alkene. The TPC ranged from 30.5±7.8 for DCM to 168.5±23.3 mg GA/g for DCM:MeOHpropolis extracts. The FRSA ranged from 6.56 % for the DCM to 19.22 % for the DCM:MeOH extracts of July 2014. The MeOH extracts of the propolis showed higher toxicity against *Escherichia coli* and *Staphylococcus aureus* than the DCM:MeOHpropolis extracts. The latter extracts showed the highest toxicities against *Candida albicans* and *Aspergillusniger*.

Key words: Phenols, Antioxidants, *Apismelliferajemenitica*, *Ficuspalmata*, Saudi Arabia.

MARINE SCIENCES

Surface architecture of the mouth cavity in a carnivorous fish *Scomberjaponicus* (Houttuyn, 1782) (Scombridae)

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Abstract

Chub mackerel *Scomberjaponicus* (Scombridae) is a pelagic species that inhabits warm and temperate coastal waters of the Atlantic, Indian and Pacific Oceans. The topological characteristics of the mouth cavity of the carnivorous fish *S. japonicus* was studied by using light microscope. The results revealed that all the teeth of *S. japonicus* are pointed and canine-like, papilliform teeth present on the premaxillae and the anterior regions of the dentaries are associated with seizing, grasping and holding of prey. The morphology and distribution of different taste buds of *S. Japonicas* were predominantly localized at tongue and the anterior regions of the mouth cavity. Two types of taste buds are elevated from the epithelium at

different levels, which may be useful for ensuring full utilization of the gustatory ability of the fish, detection and analyzing of taste substances, as well as for assessing the quality and palatability of food, during its retention in the mouth cavity. Observations of the surface architecture of the mouth cavity of *S. japonicas* have been discussed within the context of feeding and habitat preferences, as well as ecomorphological adaptation of the species.

Key words: *Scomberjaponicus*, light microscope, surface architecture, mouth cavity, taste buds.

MATHEMATICS

Study in P^h –BirecurrentFinsler space

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Abstract

In the present paper, a Finsler space F_n whose Cartan's second curvature tensor P_{jkh}^i satisfies $P_{jkh}^i|_{\ell m} = a_{\ell m} P_{jkh}^i, P_{jkh}^i \neq 0$, where $a_{\ell m}$ is non-zero covariant tensor field of second order, is introduced and such space is called as P^h -birecurrent space and denoted briefly by P^h -BR- F_n . The aim of this paper is to obtain some birecurrent tensors in this space. Also, we introduced Ricci birecurrent space. We proved the projection of some curvature tensors on indicatrix are birecurrent.

Key words: Finsler space, P^h -Birecurrent space, Ricci birecurrent tensor, projection on indicatrix.

Analysis for Cartan's fourth curvature Tensor in Finsler space

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Abstract

In this paper we discussed decomposition for the curvature tensor K_{jkh}^i of three cases in generalized K^h -recurrent Finsler space, K^h -birecurrent Finsler space and K^h -trirecurrent Finsler space, some results have been obtained in such space, different identities concerning the above spaces.

Keyword: K^h -R F_n , K^h -BR F_n and K^h -TR F_n , decomposable of Cartan's fourth curvature tensor K_{jkh}^i , symmetric and skew – symmetric property

MEDICINE

Analysis requests for sonography examination made by emergency residents in Algamhuria Modern General Hospital- Aden -Yemen

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Abstract

There is an evidence that inadequate clinical information is associated with an increased level of inaccurate reports. In our practice, we have noticed that sonography requests sometimes do not contain enough information to aid to better sonography report. The aim of this study is to analyze the requests for sonography examination in the Emergency Department of Algamhuria Modern General Hospital –Aden- Republic of Yemen, and to determine if requests provide adequate information for sonographers. We have retrospectively reviewed 250 randomly selected request forms received by the ultrasound unit of Radiology Department, at the Emergency Department. The ultrasound most frequently requested by area is the abdominal and pelvic ultrasound, being 80.8% of the analyzed requests while one (0.4%) did not have the specific part of the body area to be investigated written on the request form. Four requests (1.6%) with no patient's name (s) and seven (2.8%) with no father name (s) . Eighty eight requests (35.2%) did not have date of request on it. One hundred and twenty seven (50.8%) of the request form did not have the age of the patient. Patient status wasn't mentioned in almost all except 9 /250 (3.6%). Clinical and laboratory information were absent in 128(51.2%) of the requests forms. Only 10 (4%) had information of previous radiographic investigations, while 240 (96%) did not have any previous radiographic information.. Two hundred and nine (83.6%) of the request forms had the doctors names and signatures on the request. Our audit's data analysis revealed that only two of the 250 requests reviewed were completed in full. We found that requests for sonography examination in the Emergency Department of our hospital haven't provided adequate information for sonographers.

Key words: Emergency sonography, Sonography request, Request audit.

Prevalence of diabetes mellitus among Non-Hodgkin's lymphoma patients admitted in Al-Sadqa Teaching Hospital during 2017

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Abstract

Non-Hodgkin's lymphoma (NHL) is a common hematological malignancy, it's incidence has been rising globally since the 1970s with an increasing prevalence of diabetes mellitus (D.M) and NHL, the number of patients suffering from both diseases is growing. Among adult patients, regardless the gender, the second most common cancers among Yemeni population was NHL with 8.0%.

This is a descriptive record-based study of 42 NHL cases admitted to Al-Sadqa Teaching Hospital, National Oncology Center - Aden, from 1st January to 31st December 2017, to identify the prevalence of D.M among NHL patients.

In this study, there was 6.37% of patients admitted with NHL, 11.9% of them with history of DM, the mean age was higher for patient with diabetes 62.6 ± 7.7, male patient percentage was higher with 13.6% and obesity with 42.9 % among patients for NHL and D.M.

In this study, 76.8 % of patients treated by CHOP (cyclophosphamide, doxorubicin, vincristine and prednisone) regime with only adjustment of prednisolone dose for diabetes patients.

This study provided, for the first time, the prevalence of diabetes among NHL patients.

Key words: NHL, D.M, Prevalence.

PHYSICS

Calculation of potential energy of molecules and kinetic energy of electrons on Slater functions basis

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Abstract

In this work, common analytical expression for potential energies of molecules (interaction energy between electrons and nuclear, and between electrons), and kinetic energies of electrons have been obtained. As basis functions Slater , Atomic Orbitals have been used. By applying Hartree-Fock-Roothaan method, calculations for some two atomic molecules with closed and open electronic shells have been carried out. The accuracy of the calculations have been checked by virial theorem.

Key words: atomic orbital, molecular orbital, Slater functions, potential energy.

SHORT COMMUNICATION

MEDICINE

Methemoglobinemia(Case report)

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Abstract

Congenital methemoglobinemia is a rare overlooked differential diagnosis in patients presented with generalized (peripheral and central) cyanosis unrelated to cardiopulmonary causes. Here, we report a case of 9-year-old boy who was diagnosed as methemoglobinemia. He was presented with peripheral and central cyanosis, while his cardiovascular and respiratory system were normal. This case stresses the importance of alertness among the treating physicians to this disease occurring in a patient with cyanosis unconnected to cardiopulmonary causes.

Key words: Methemoglobinemia; Congenital; Cyanosis.

ARABIC TITLES

AGRICULTURE SCIENCES

A survey of weeds in some farms atAL- Qatten Directorate Hadramout Governorate

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Abstract

An exclusive study of weeds spread in Alqatten Directorate farmsin Hadramout Governoratewas carried out from 20/10/2015 to 20/11/2016. The aim of this study is to identify the types and number of weeds in the farms. The study area included 16 farms in 4 different regions. 42 plant species belonging to 22 plant family were identified. Grassy family was the most present with 7 species on this average of 16.67%. The most wide spread grass was *Cynodondactylon*and *Setariaverticillata*; as they were found in all studied farms, while *Heliotropiumlongiflorum* and *Maeruacrassifolia* were less prevalent as they found separately (one in each farm).

The study revealed that there is a difference in the number of weed plants in the farms studied. The high number of weed types was found at AL- Rashasha farm in Alaqquad area where 29 types of the total number of types were found in the place of the study on an average of 69%. The minimum number of weeds was found at Alkaraba area, in Al – Moustagbal farm where 11 types were on an average of 26.19% of the total number of types found in the place of study.

Key word: Weeds, farms, plant family.

Effect of Licorice (*Glycyrrhizaglabra*L.) extract and powder on growth of onion (*Allium cepa* L. cv. Bafatiem).

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Abstract

This investigation was carried out during 2016/2017 to study the effect of extract and powder of Licorice (*Glycyrrhizaglabra* L.) on the growth of onion (*Allium cepa* L. cv. Bafatiem). For this purpose a field experiment was conducted in a farmer field in the village of Al-Wahat, Tuban

District,LahejGovernorate.The experiment consisted of 7 treatments: spraying licorice extract with three concentrations (5, 10, 15 g / L) and thev addition of powder to the soil at three levels (5, 10, 15 g / m²) in addition to the control (without spraying and without addition). The soil of the experiment was cultivated and the seedlings were planted in the permanent land. Spraying was done in three batches after planting in the field for 60 days with a two weeks gap (interval), and the plants were sprayed until the fully wetness. In addition, the licorice root powder was added to the soil during planting; the second was added after 60 days of the first batch and then the experiment was carried out using the randomized complete block design with three replicates.

The results of the field experiment showed that all the treatments of spraying and addition of powder to soil gave the low values of plant, height, compared with control which gave the highest average plant height of 81.23 cm. Licorice extract spraying at 5g/L and the addition to soil of powder at 5 and 10 g/m² recorded the highest tuber blade number which reached to 20.47, 20.6 and 20.53 blade/plant. Thus, the addition of powder to soil at 5g/m² caused a significant increase in tuber blade number compared with control which was the lowest in tuber blade number and reached to 19.6 blade/plant. Onion plants treated with licorice powder at 15g/m² and spraying at 5g/L caused increase in the leaves area that reached 19.73 cm² and 18.82 cm²respectively. The difference was significant compared with control and all other treatments, except the difference was not significant between the spraying at 5g/L and addition to soil of powder at 5g/m². Licorice extract spraying at 5g/L and the addition of powder to soil at 5g/m² caused an increase in dry weight of total vegetative of 11% for both.

Key words: Licorice, Onion,Extract , Powder.

Evaluation of some maize cultivars in different planting dates

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Abstract

A field experiment was carried out at the Farm of Nasser's Faculty of Agricultural Sciences which located in Delta of Tuben, during 2011/2012 and 2012/2013 seasons, to evaluate three maize cultivars (Tehama-1, Taiz-2 and local one) in three planting dates (November 4th, December 4th and January 4th). The results of the combined analysis of the two seasons showed that the delay of planting, date from November 4th to December 4th and January 4th significantly reduced the number of days to 50% tassling and silking, plant height, ear height, leaf area of topmost ear, leaf area index, ear length, number of grains / row, 100-grain weight, grain weight / ear, and grain yield / hectare and this reduction in grain yield was 10.96 and 21.31% in the second and the third planting dates compared with the first one, respectively.

Cultivars had significant differences in all of the characters under study except ear diameter with the superiority of Taiz-2 and Tehama-1 over the local one by 28.14 and 25.46% in grain yield, respectively. The interaction between planting dates and cultivars significantly affected plant height and leaf area of topmost ear as well as grain yield and its components ear length, number of grain / row and ear grain weight. Highly significant positive correlations were found between grain yield and previous yield components.

Key words: Planting dates, cultivars, maize.

Response of the vegetative growth of tomato plants (*Lycopersicon esculentum* Mill) with the foliar spraying with zinc element

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Abstract

The experiment was carried out at the Department of Biology, Faculty of Education – Aden, University of Aden. It aims at knowing the effect of zinc element on the growth of tomato plants (Samia type). The study depends on the foliar spray by zinc, the leaves were treated by four zinc element concentrations (25, 50, 100 and 200 mg/L) and another without treatment used as control. All treatments and control were repeated for three times.

The tomato seeds have been planted in black plastic bags and then sprayed twice with zinc. The first foliar spraying was after appearance of the real leaves (4-6) and the second spraying was done after one month.

The results revealed that all the zinc treated leaves of the tomatoes plants showed higher values for the vegetative qualities. The concentration (200mg/L) of zinc treatment showed a best result of vegetative qualities like length and diameter of the stem, root length, leaves

area and dry and wet weight of the root and stem and chlorophyll content of leaves, compared to the other treatments.

Key words: Zinc, tomatoes, leaves spraying, stem, root leaves area, chlorophyll content.

The effect of different phosphors fertilizer levels on productivity and characteristics of Alfalfa forage (*Medicago sativa* L.)

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Abstract

This study was conducted in the Research Farm of the Faculty of Agricultural and veterinary medicine- Ibb University, Yemen, in 2012 – 2013 to study the effect of 4 levels of phosphate fertilizer, (tri super phosphate 46%) T1(0) T2(100), T3(200) and T4(300)(kg/ha P₂O₅) on alfalfa forage. The experimental design was randomized complete Block deign (R.C.B.D) in quadruplicates. The results showed a significant difference among the treatments (T3, T4, T2), respectively, and control (T1) in each of harvests (5,7,8,9,10 ,2 and11), also showed significant difference between T3 and T4 compared with T2 in the harvests (2,4) with the highest plant high in (T3) in most harvests. The number of branches was not significant except between both of T3, T4 and both of T2, T1 in harvest 9. The production of alfalfa forage were between (3.78- 18.67 t/ha) the production was increased with the increasing of P levels up to (200kg/ha) T3, and it decreased at (300kg/ha) T4. There were significant differences with the three treatments and control at (p 0.05) where the highest differences were for T3 followed by T4 in all harvests, and there were differences among T3, T4 and T2 which surpassed T1. Dry matter and fiber were increased by P increasing directly.

Key words: phosphate fertilizer (tri superphosphate 46%)- productivity- alfalfa forage (*Medicago sativa* L.)- Ibb province.

Estimation of heavy metals concentration in water, soil and some plants in Al-Haswah preserve - Aden -Yemen

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Abstract

This study focuses on the estimation of heavy metal concentrations in the protected environment of Al-Hoswah, Yemen, Aden. The heavy metals were of great importance in this study, such as cadmium (Cd), cobalt (Co), copper (Cu), iron (Fe), manganese (Mg), lead (Pb) and zinc (Zn). For this study, the samples of water reaching to Al-Hoswah protected environment and some other samples of soil, plants, such as grass, *Sorghum bicolor* (L.) moench, *Azadirachta indica* (L.) A. Juss., *Pithecellobium dulce* (Roxb.) Benth, weed and grass were analyzed by the Atomic Spectrometer (AS), for the estimation of the heavy metals concentration in samples. The findings of the study revealed that the concentration of zinc, cobalt and lead in the treated wastewater which reached to Al-Hoswah protected environment are less than the allowed limit for irrigating the plants. Besides, the concentration of cadmium was in its maximum allowed limits, while the concentration of manganese slightly exceeded the allowed limit. Iron also exceeded the allowed concentration for irrigating the plants. It has been appeared that the soil content of the simple easy iron and zinc elements in depth of 25-50cm were greater than the critical limit of the element in the soil of agriculture, while the concentration of manganese element in depth was found at its lowest critical limit. But, the concentration of zinc, lead, cadmium and manganese in the studied plants was at the allowed limit. Furthermore, the concentration of cobalt in the samples of weed, grass, Neem tree and the Deiman tree was a little raising of the natural level. The concentration of iron was high in all the samples and less concentration was found in sorghum.

Key words: The heavy metals, soil, plants, environment, Al-Hoswah protection-Aden.

Quality of drinking water of Al-Ain town and its surroundings in Lewder- Bayan Governorate, Yemen

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Abstract

The aim of this paper is to study the quality of drinking water of the Al-Ain and its surrounding, comparing it with the local and international standards. For this purpose, five samples of the different drinking water wells which supplying Al-Ain town were collected in February 2009. The physical analysis includes the following results:

PH 7.07-7.50, Turbidity (N.T.U) 0.32-85. (Electrical conductivity) ($\mu\text{s}/\text{cm}$) 448+2310. Total dissolved Solids) mg/l) 263-1387.

The results of the chemical analysis (mg/l) showed Alkalinity 246-266. Chlorides 63.82-364. Nitrates 16.72 – 117.48. Sulfate 137.5-500. Bicarbonate 218.3-324.5. Fluorides 0.52 – 1.55. Sodium 44.83-29.69, Potassium 1.95-20.25, Magnesium hardness (expressed as calcium carbonate) 84-204. Calcium hardness (expressed as calcium carbonate 174-518 and Total hardness) expressed as calcium carbonate 262-722. The study have shown that the drinking water of Al-Ain project is unsuitable for human requirement or use.

The bacteriologic ally results show that most of the samples under study are bacteriological polluted with (Most probable number) (MPN) with degrees ranging from (100 and above).

Key words: Quality, Evaluation, Drinking water, Al-Ain ,Abyan ,Yemen

Ethno- medicinal plants in Dhala District- Al-Dhala Governorate- Yemen

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Abstract

This study was carried out during different seasons between August 2015 to February 2016 in the Dhala District Dhala Governorate , during the study identified on 59 plant species belonging to 49 genera of 31 families that are used in different medical purposes. Varied plant parts of use as noted above the use of the plant leaves have more uses than any other parts (44.06%), followed by the succulents part (25.42%), then the fruits by 8.47%), followed by the roots, stems (6.77%) each. ,seeds ,full plant (3.38%) each, and the lowest percentage represents(1,69%). The sicknesses that are treated by the plant parts verified the inner sicknesses such as stomach , worms, diabetic, kidney, in addition to the outer sickness such as the treatment of wounds, vitilago and Burns ... etc, and the method of usage could be specified by the type of disease and the used plant.

Key words: medicinal plants, ethnobotanical, plant parts, Diseases, Al-Dhala Governorate

Applications of GIS for morphometric and hydrologic analysis of drainage basins of Hidibu Plan – Socotra Island

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Abstract

This study presented an applied model for the use of geographic information system GIS in the construction of geographical database of the morphometric characteristics of their drainage systems in the Haidibu-Socotra Island area to obtain an understanding of hydrological characteristics. The study has been concluded with a number of findings. As a result, the morphological analysis was carried out for the three main basins of Hidibu plain, namely Wadi Fardahaa basin, covering 28 km², Wadi Danajn basin, covering 15.3 km², Wadi Sawaq Basin, covering 43 km². The study of the morphological characteristics of drainage basins in the Hidibu area found that they all are in the growing stage. The large number of gorges, undulation of watershed divides, rectangular shape, are good evidences about growing stage of drainage basins in the study area. Due to that, the arrival of the flood is delayed after the storm. The study revealed that, low value of Texture Topography and coarse shape of drainage basins, due to the dominance of the structure rifting, showed the large number of faults and joints that contributed to increased leakage and reduced runoff. The study recommended that the flow at downstream of the catchment areas must be regulated,

especially in the lower part of Fardahaabasin that crosses the highly populated city in the island (Haidibou city). The study also recommended the necessity of establishing water measuring stations in the wadis for the purpose of regulating water flow and utilization in agriculture and other human uses.

Key words: Hydro-morphometric Characteristics, Digital Elevation Model (DEM), Geographic Information System (GIS), Haidibu- Socotra Island.

PHYSICS

Strength tensile improvement of the Al alloy by reinforcing with steel fibers

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Abstract

In this study, the mechanical properties (toughness Tensile) of the 6063 aluminum alloy were improved by reinforcing it with a continuous three-dimensional metal fiber mesh by weaving metal wires of wrought steel Diameter (0.4mm) and by weaving each layer of wire independently, each layer was weaved with the next layer (the first layer with the second layer, then the second layer with the third layer... etc), in order to obtain a mesh of continuous woven fibers.

The mesh was placed in a metal mold, poured the 6063 aluminum smelter at 800 ° C and kept the mold inside the furnace for 30min. The process of filling the melt was completed within the mesh, then the mold was cooled and the reinforced alloy was obtained. Standard samples were tested for their tensile properties and the results were compared with reinforced Alloys by particles of aluminum oxide, or titanium oxide or silicon carbide.

It was observed that the aluminum Alloy toughness Tensile & yeild point were increased after using the reinforcing Particles, while there was a noticeable increase in them when the aluminum was reinforced with a mesh of three dimensional reinforcing fibers, while there was a decrease in the elongation.

Key words: 3D woven, toughness tensile, Weaved, reinforcement, fiber, mesh.

Effect of adding Aluminium powder on the bending resistance properties and fire retardant for unsaturated polyester

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Abstract

The Study of the Effect of Aluminum powder on the bending resistance properties and fire retardant for unsaturated polyester, which is manufactured in Turkey, a function of the percentages of Aluminum powder (0.5%, 0.8%, 1%, 1.5%, 2%, 2.5%), a particular size (150 μm), were investigated through several variables, such as, bending resistance and the flame resistance. In addition, the samples of the base material (unsaturated polyester) were measured in a pure and when the aluminum powder was added by optical microscopy. Absorption spectrometer measurements were taken in the infrared (FTIR) area of the pure and the polymer with the weight ratios of the fillers. The results lead to that the strength at bending resistance is (140 Mpa) at the percentage (0.8%). The obtained results appeared that, when the added Aluminum powder to reduce the spaces between the polymer chains, which reflects the high ability of the polymer against the applied stress, the degree of homogeneity is high between polymer and additives. Also, the results indicated a lowered percentage in bending resistance at the percentage (2.5%) is (84.3Mpa), and observe that the average time of burning starts strong impact when (0.5%) as increasing to(168 Sec) and then begins to decline behavior when increasing proportions weight and then increasing behavior when increasing proportions when (2.5%) as increasing to(195 Sec). The results also indicated that the percentage for the time of burning ranged between negative values at the low weight ratios of the added (1.5% - 0.5%) and positive values at the high weight ratios (2.5% -2.5%).

Key words: unsaturated polyester, Aluminum powder, bending resistance, flam resistance, Percentage for time of burning.