Abstracts of Research papers Volume 24 No. 2 (October 2020)

TABLE OF CONTENTS

ENGLISH TITLES

AGRICULTURE SCIENCES

The effect of cutting time on Forage and crud protein of Alfalfa cultivars yield *(Medicago sativa L.)* **Dhamar- Yemen**
Nasser, Obadi. Saeed   and Mohammed, Mqbel Mofarrerh

The effect of Nitrogen fertilization on yield of long staple cotton cv. "Muallem 2000" *(Gossypium barbadense L.)*
Mohammed Salem Roiss , Khaled Mohammed Dowlat and Mohsen Ali Ahmed

CHEMISTRY

Phytochemical analysis of four medicinal plants in Yafae-Yemen
Aisha Mohammed Ali, Taha Abubaker Fdhel and Adel Ahmed. Saeed

ENVIRONMENT

The use of chemical fertilizers in the cultivation of khat and its impact on the physical and chemical properties of soils in Al-Husain District , Al-Dhalaa- Yemen
Amani Ahmad Kardash   and   Muath Abdumajeed Ba'abad

Taxonomic study for Lamiales order in Tuban Delta, Lahej Governorate, Yemen
Mazen Alawi Ali; Abdul-Nasser Abdullah Al-Gifri and Othman Saad Al-Hawshabi

Taxonomic study on two subfamilies of Caesalpinioideae and Mimosoideae in Habiel Jabbar District, Lahej Governorate, Republic of Yemen
Abdul Hakeem Fadhel Al-Hageli   and Othman Saad Al-Hawshabi

ENGLISH TITLES

ENGINEERING

Generate Algorithm as a Key Parameter of SVM parameter optimization and feature selection for acute Leukemia diagnosis

Najaat Ahmed Abdullah[1], Mohammed Abduljalil Ibrahim[2] and Adel Sallam Haider[1]

[1]Department of Information Technology, Faculty of Engineering, Aden University, Yemen
[2] Department of Information Technology, Faculty of Engineering, Taiz University, Yemen
[1] najaat200020@gmail.com, [2]Sabri1966@yahoo.com, [3]Haider.Adel@gmail.com

Abstract

The selection process of the kernel parameters and the relevant features are very crucial to enhance the classification tasks. Thus, in this work, a genetic algorithm that mimics the biological evaluation is used to optimize the support vector machine kernel parameters in order to achieve a high classification accuracy of an acute leukemia diagnosis. The results proved that the combination of genetic algorithm with support vector machine increased the classification accuracy of acute leukemia diagnosis to 99.19%, compared with the value of 89.43% obtained under default support vector machine kernel parameters. This can be directly attributed to the elimination of the irrelevant features and the suitable selection of the kernel parameters. This implies that the genetic algorithm model can be adequately used to solve the optimization problem and features subset selection that gives the optimal accuracy.

Key words: acute leukemia, support vector machine, genetic algorithm, optimization, feature selection.

An enhanced technique for digital watermarking using Multilevel DWT and error correcting codes

[1]Mohsen Hussein Mohmmad ,[1]Monia Abdullah Ahmedand Adnan Abdullah [2]Zain

[1]Department of Information Technology, Faculty of Engineering, Aden University.
[2]Department of Electronics & Communications, Faculty of Engineering, Aden University.

Abstract

Digital Watermarking has attracted researchers' attention because of its useful applications, and over the past decades, great efforts have been made to develop digital watermarking techniques and algorithms. Most researches use different transform techniques

to enhance the robustness and quality of extracted watermark. This paper presents an enhanced technique for digital image watermarking based on multilevel Discrete Wavelet Transform (DWT) in conjunction with the well-known RS codes over finite fields. To observe and appreciate the significance of using the error correcting codes technique for enhancing the digital watermarking performance against attacks, a series of experiments were conducted. The enhanced methodology presented and implemented in this research achieved a very good performance. Regarding the significance of using error correcting codes in conjunction with DWT transform digital image watermarking; it was shown that in all cases investigated, for all the attacks considered, there was increase in the robustness of the digital watermark, in terms of the performance measure SSIM values. In some cases it improves to almost 27 times the case without using error correcting codes. Among each class of codes, for all the attacks, Reed-Solomon block codes of length n $= 255$ over the Galois field GF(2^8) withk $= 135$, performs better than all others.

Key words: Discrete Wavelet Transform (DWT), image watermarking, Error Correcting Codes, watermarking embedding, watermarking extraction.

ENVIRONMENT

In vitro effect of three pesticides on soil bacteria

Amani Ahmed Qardash and Muath Abdumajeed Ba'abad

Department of Biology, Faculty of Education University, of Aden Yemen
*Corresponding Author: Email: *madhbabad3@gmail.com*

Abstract
   The results of the effect of three concentrations (1%, 25%, and 50%) and control of each pesticide on the number of bacteria colonies were reported and compared to the control which was 356.9 CFU/gm, with percentage of 100%. The effect of concentrations 1% of Abamectin, Triazophos, and Methomyl on bacteria growth were recorded [234.8 CFU/gm (65.78%), 200.4 CFU/gm (56.1%), and 224.4 CFU/gm (62.8%), respectively].
The effect of concentrations 25% of Abamectin, Triazophos, and Methomyl on bacteria growth were recorded [124.0 CFU/gm (34.7%), 38.2 CFU/gm (10.7%), and 1.9 CFU/gm (0.5%), respectively], While, the bacterial growth at the concentrations [(50%) of each of three pesticides was 0.7 CFU/gm (0.19%)] recorded for each tested \pesticide.

Key words: Bacterial colonies, Pesticides, Nutrient agar medium.

GEOLOGY

Estimation of limestone deposits calcium carbonate source for industrial applications in some area of Lahej Governorate- Yemen

Naela Mohammed Ahmed[1], Shaif Kasem Saleh[2] and Omer Ali Mansha[3]

[1]Department of Archeology, Faculty of Arts, University of Aden
[2-3]Department of Chemistry, Faculty of Science, University of Aden, Yemen.[2-3]

Abstract

The area of the study is at Lahej Governorate, Yemen, which is about 110 km to the north from Aden. Limestone deposits at the study area belongs to Amran Group of Jurassic Age. Three main formations composed Amran Group ; Lower: Shugrah Formation, Middle: Madbi Formation and Upper: Nayfa Formation. Nayfa Formation is characterized by thickly bedded and massive limestones of which having between them a high quality, interestingly pure thick limestone, at depths from nearly 40 m to75m, which is studied early by the National Company of Cement (NCC), at the areas of Wadi Faltah, Wadi Nakhleen and between Ar-Raqah and Wadi Asaq. These limestones are classified as high and very high pure limestones according to the results of chemical analysis, the spatial contour maps of percentages of $CaCO_3$ and CaO attributes. Limestone is considered as raw materials for proper industries. Accordingly, the limestones could be used for glass manufacture. High and very high limestone is the suitable for Soda ash manufacturing, for iron and steel industry.

Key words: Geology, Chemistry, Purity, industrial application, Calcium Carbonate, Nayfa, Jurassic, Lahej Governorate.

MARINE SCIENCES

Marine ornamental Fishes in the Red Sea: Status and trade

Gamal Mohammed Bawazir[*]and Zaher Ali Al Agwan[**]

[*]Center of Environmental Sciences and Studies. Aden University. Republic of Yemen
[**]The Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden (PERSGA), Jeddah, Kingdom of Saudi Arabia

Abstract

Ornamental fish trade is rapidly expanding and there is a growing recreational demand for aquarium fishes in international markets. This paper aims to initially assess the status of the marine ornamental fishes and their trade in the Yemeni Red Sea. For this purpose, a field survey was conducted in May-June (2006) in 42 sites in this coast, and information regarding the trade was collected. These sites were located in 40 islands where coral reefs are the most dominant habitats. There were statistically differences in the number of the ornamental fishes between and within the sites. Many species of such fishes were targeted for trade in

unsustainable manners. This could affect the marine ecosystem in Yemen if such trade continues without unsustainable management.

MATHEMATIC

Generalized Fuzzy q-open sets

[1]Rdhwan. Mohammed Aqeel and [2]RashedAlkhadher Nasser

[1]Department of Mathematics، Faculty of Science، Aden University, Aden, Yemen
[2]Department of Mathematics Faculty of Education،LawderAbyan University, Lawder, Yemen
E-mail: raqeel1976@yahoo.com ,E-mail: rashednasser101@yahoo.com

Abstract

In this paper, we introduce the concepts of μ-fuzzy q-opensets which is generalization of simply open sets defined by Neubrunnove [9]. We also introduce and investigate, with the help of this new concept, the concepts of qi_μ-Fuzzy open sets and qc_μ-Fuzzy closed sets. The relations between these concepts are investigated and several examples are presented.

Phase space localization of orthonormal sequences in $L^2_\alpha(\mathbb{R}^d_+)$

Amgad Rashed Naji and Ammer Zain Othman

Faculty of Education of Yafa'a University of Aden
amjad.alomary@yahoo.com

Abstract

In this article, we proveMalinnikova's result for Weinstein operator as follows: Let $\{\phi_n\}_{n=1}^\infty$ be an orthonormal basis for $L^2_\alpha(\mathbb{R}^d_+)$. If the sequences $\{e_n\}_{n=1}^\infty \subset \mathbb{R}^d_+$ and $\{a_n\}_{n=1}^\infty \subset \mathbb{R}^d_+$ are bounded, then

$$\sup_n \left(\||x - e_n|\phi_n\|_{L^2_\alpha(\mathbb{R}^d_+)} \||\xi - a_n|\mathcal{F}_W(\phi_n)\|_{L^2_\alpha(\mathbb{R}^d_+)} \right) < \infty.$$

On Generalized R^h-trirecurrent space

Fahmi Yaseen Qasem[1], Adel Mohammed Al-Qashbari[2] and Mohsen Mohammed Qasem[3]

[1-2]Department of Mathematics, Faculty of Education -Aden, Aden University, Khormaksar, Aden, Yemen
[3-]Department of Mathematics, Faculty of Education-Aden, Aden University, Zoped, Adhala, Yemen

[2]Email: *Adel-ma71@yahoo.com*

Abstract

In the present paper, a Finsler space F_n whoseCartan's fourth curvature tensor R^i_{jkh} satisfies $R^i_{jkh|\ell|m|n} = c_{\ell mn} R^i_{jkh} + d_{\ell mn}(\delta^i_k g_{jh} - \delta^i_h g_{jk})$, $R^i_{jkh} \neq 0$, where $c_{\ell mn}$ and $d_{\ell mn}$ are non-zero covariant tensorfields,of third orderis introduced and such space iscalled as *generalized R^h-trirecurrentFinslerspace* and denote it briefly by GR^h-TR F_n , we obtained some generalized trirecurrent spaces. Also we introduced Ricci generalized trirecurrent space.

Key words: Ricci tensor R_{jk}, generalized trirecurrent tensors.

Exact solutions of the Harry Dym Equation using Lie group method

Mobarek Awadh Assabaa and Omer Faraj Mukherij

Department of Mathematics, Faculty of Science, Hadhramout University, Yemen
Email: asaba973@gmail.com

Abstract

In this paper, we apply Lie symmetry group analysis to the Harry Dym equation. Then, the similarity reduction will be found, and the invariant solutions of Harry Dym equation is obtained from the solutions of reduced ordinary differential equations.

Key words: Harry Dym equation, Lie group, similarity reduction, invariant solutions.

On Maximal α-Continuous Maps in Topological spaces

Khaled Mohammed AL Hamadi* and EbtesamQaid. Mohammed**

* Dept. of Math., Faculty of Sciences, Univ. of Aden, Yemen
** Dept. of Math., Faculty of Education, Univ. of Aden, Yemen

Abstract

In this paper, we introduce new types of maps called maximal α-continuous, maximal α-irresolute, minimal-maximal α-continuous and strongly maximal α-continuous maps in

topological spaces, studying some of their fundamental properties and their relations with others. Also, we introduce a new class of topological spaces called αT_{max} studying some of their fundamental properties.

Key words: Minimal open set, maximal open set, maximal α-open and minimal α

MEDICINE

Attitude of dental students toward diabetes counseling, monitoring and screening in Faculty of Dentistry - Aden University

Mohammed Hassan Al-Sakkaf[1] and Reema Khaled Al-Horaibi[2]

[1]Faculty of Dentistry-Aden University
[2]Primary Health Care Center – Aden University
Dr.mohd.alsakkaf@gmail.com

Abstract

Globally, 425 million people have diabetes mellitus (D.M).It is well established that diabetes is associated with oral manifestations which displays an increased risk of oral disorders. It is estimated that approximately 5% of all patients seen in dental offices have diabetes. Considering the large number of patients with undiagnosed diabetes who visit the dentists were well-positioned dentist will be able to detect undiagnosed cases early by recognizing oral manifestations and referring suspected to a physician for further diagnostic workup. Dental professionals being a part of health care team members, also share the responsibility of screening and counseling patients for various systemic and infectious disease.

The aim of this study is to examine student's attitudes towards diabetes counselling, monitoring and screening.

A cross sectional survey for 372 from the first and fifth year students, who completed self-administrated questionnaire during Nov 2017, were conducted.

Most of dental students agree with educated patient about the risk of diabetes to oral and overall health and wellbeing, which consider part of their professional responsibility with interesting agreement for referring patient with high blood glucose to medical evaluation.

Less than half of student believe that dental professional time can be spent in other things rather than obtaining blood glucose for patients and more than half of them consider the use of glucometer in dental practice for screening, monitoring and reading within the scope of dental practice.

Attitudes of students for diabetes education, monitoring and screening play an important role in future dealing with the patients in real practice.

Key words: Dentist, Hyperglycemia, Glucometer.

Electrocardiographic and echocardiographic correlations of dilated cardiomyopathy in Aden Governorate

Khadija Shafiq Aman[1], Mohammed Ahmed Alsaadi[1] and Mariam Taher Bin Yahia[2]

[1]Unit of Cardiovascular Diseases at Department of Internal Medicine, Faculty of Medicine and Health Sciences, University of Aden. [2]Department of Pediatric, Faculty of Medicine and Health Sciences, University of Aden

Abstract

Idiopathic dilated cardiomyopathy (IDCM), which represents ventricular chamber enlargement and contractile dysfunction is an often fatal cause of heart failure (HF) in young adults. In Yemen, the incidence and prevalence of dilated cardiomyopathy (DCM) appears to be increasing, whether secondary to improved detection or due to local factors, such as chronic khat use. In this prospective study, we sought to investigate the electrocardiographic and echocardiographic findings in patients with IDCM.A total of 50 patients with IDCM, from three hospitals in Aden were studied. The mean age of patients was 44.6 ± 12 years, 39 were males and 11 were females. History of chronic khat use was found in 84% and family history of DCM was found in 32% of the patients. All secondary causes of DCM were excluded. Coronary artery disease (CAD) was excluded by coronary angiography. Electrocardiography (ECG) and two-dimensional (2D) echocardiography were done for all these patients using standard techniques. Diagnosis of DCM was one by echocardiography. Sinus tachycardia and ventricular ectopic beats were common ECG abnormalities, but atrial fibrillation, left bundle branch block, weak R wave progression in the chest leads were found to be associated with advanced left ventricular (LV) systolic dysfunction. There was a markedly dilated LV cavity with mean LV ejection fraction (EF) of 28%. While mitral regurgitation was seen in 4o% of the patients, thrombus formation was found in 16% of patients with LVEF of <20%.

Key words: Idiopathic Dilated Cardiomyopathy, Electrocardiography, 2D Echocardiography.

PHYSICS

Mathematical modeling of the electronic structure of Titanium dioxide $(TiO_2)_6$ nanoparticles

Tawfik Mahmood Mohammed

Physics Department, Al-Dalaa Faculty of Education , University of Aden

Abstract

The calculation of the number of atoms of the given dimensional nanoparticle, composed of different type atoms has been researched in this work. The calculations have been carried out for nanoparticles of titanium dioxide. Theoretical visual models have been

configured, and quantum – mechanical calculations have been carried out for $(TiO_2)_6$ nanoparticle. The calculations for titanium dioxide nanoparticle have been carried out on the basis of Gaussian atomic orbitals. Besides, Gaussian functions have been used as atomic orbitals. The numerical values of unknown coefficients of the linear combination of atomic orbitals of the atoms of the titanium nanoparticle have been found from the solution of Hartree–Fock–Roothaan (HFR) equations.The values of orbital energies, ionization potential, and the total electronic energy of titanium dioxide nanoparticles have been determined . The calculations show that, titanium dioxide nanoparticle is tough, electrophile, and stable dielectric, material. The effective charge of atoms have been calculated, and the theoretical visual mode of titanium dioxide nanopartical have been constructed.

Key words: nanotechnology, quantum-mechanical calculation, computer models Hartree–Fock–Roothaan method.

ARABIC TITLES

AGRICULTURE SCIENCES

The effect of cutting time on Forage and crud protein of Alfalfa cultivars yield (*Medicago sativa L.*)Dhamar- Yemen

Nasser Obadi Saeed[1] and Mohammed Mqbel Mofarrerh[2]

[1]Faculty of Agriculture -University of Aden
[2]Agricultural Research and Extension Authority (AREA)

Abstract
A field experiment was carried out at the exp. Farm of The Agricultural research and extension authority (AREA) , during 2014/2015 seasons to determine the Effect cutting time and Cultivars on green and crud protein yield of Alfalfa (Medicago sativa L.) under Dhamar area Conditions, Dhamar Governorate.This experiment contained 18 treatments which were the combination of three cutting time treatments(T): (40 days (T1),50 days (T2), 60 days (T3)) and six of Alfalfa Cultivars treatments (C): Sahli (C1) , Bahtidei(C2), Remani(C3), Saioni(C4), Koli (C5) and Mahli(C6).

The experiment split plot design in four replications was used. The study results showed the following:
Time cutting (T) gave significant effect on all of the traits under study: green yield, dry yield, percentage of crud protein% and crud protein yield in the both growing seas ons. The late of cutting time from 40 to 60 days caused an increase in all of the traits under study, except the percentage of crud protein% in the both Growing seasons.
There was a significant effect for the alfalfa cultivars(C) in both Growing seasons. The Saioni alfalfa cultivar (C4) gave the highest values in all of the traits under study green yield, dry

yield, percentage of crud protein% and crud protein yield, while the Sahli alfalfa cultivar (C1) gave less values in the same traits in both Growing seasons.

There was a significant effect for the interaction between alfalfa cultivars(C) and time cutting (T) for all studied traits in the both seasons.

Key words: Alfalfa, cutting time, Alfalfa cultivars yield, Forage, crud protein.

The effect of Nitrogen fertilization on yield of long staple cotton cv. "Muallem 2000" *(Gossypiumbarbadense*L.*)*

[1]Mohammed Salem Roiss , [2]Khaled Mohammed Othman Dowlat and [3]Mohsen Ali Ahamed

[1] El-kod Agric. Res. Station, Agric. Res. and Extension Authority
[2]Dept. Agron. and pastures, Fac. of Agric., Univ. of Sana'a
[3] Nasser's Fac. of Agric. sci., Univ. of Aden
khashah1000@yahoo.com

Abstract

A Field experiment was carried out at the experimental farm of El-kod Agricultural Research Station - Southern Coastal Plain of Abyan - during 2010 and 2011 seasons. The study aimed at determining the influencing of four levels of nitrogen fertilizer (N0, N30, N60 and N90 kg/ha) in the form of urea 46% N. On yield and its components of long-staple cotton cv. (Muallem 2000), the experiment included 4 treatment. The design of each experiment was RCBD, with four replications, was used. The area of each plot was 12 m2.

The results could be summarized as follows:

The results indicated that the values of the number of open boll/plant and seed cotton yield/plant were affected significantly by nitrogen fertilizer in both seasons, where the percentage increase were 25.6% and 17.3% for first character and 24.8 and 17.0 for second character in both seasons, respectively, compared to the treatment of the control.

Different yield per hectare of cotton seed significant depending on the different rates of nitrogen fertilization, achieving the highest yield at the treatment (N60), were 5345.00 and 3311.67 kg / ha for both seasons respectively, where the percentage increase were 31.2% and 19.8% for the two seasons, respectively, compared to the treatment of the control.

Nitrogen fertilizer: no significant effect on weight of one boll and lint percentage in both seasons.

Nitrogen fertilizer reflected significantly linear regression correlation to increase yield per hectare of cotton seed in both seasons, an addition to positive significant correlation with yield per hectare of cotton seed.

Key words: Nitrogen fertilization, Cotton, Southern Coastal Plain of Abyan.

CHEMISTRY

Phytochemical analysis of four medicinal plants in Yafae-Yemen

Aisha Mohammed Ali[1], Taha Abubaker Fdhel[1] and Adel Ahmed. Saeed[2]

[1]Chemistry Department, Faculty of Education, University of Aden, Yemen
[2]Chemistry Department, Faculty of Science, University of Aden, Yemen
adel_saeed73@yahoo.com[2]

Abstract

Phytochemical screening of four plants named *Plectranthusasirensis, Plectranthusambinicus and LavandulaPubescensDecne* (all belong to *Lamiaceae* family) and *DorsteniaFoetida*belongs to *Moraceae* family, were studiedqualitatively and quantitatively. Analysis of solvent extracts (ethanolic, methanolic, water and chlorofˋormic) for each plant, have shown the presence of active components, but most of the components (alkaloids, tannins, glycosides, saponins, flavonoids, steroids and terpenoids) were found in the methanolic and ethanolic extracts, which may be due to their high polarity. The total quantitative content (%) of these active components was varied among the studied plants. Quantitative determination of vitamins K and C by HPLC and microtitration techniques respectively, showed that the content of the first, was low, while vitamin C was found in high amounts, especially in *Plectranthusambinicus* plant, which imply that these plants can be an important source of natural antioxidants**.** Results of our study were compared with other published studies.

Key words: Yafae Medicinal Plants, Phytochemical Analysis, *P. asiransiss*, *P. ambinicus, L. pubescensDecne, D. foetida.*

ENVIRONMENT

The use of chemical fertilizers in the cultivation of khat and its impact on the physical and chemical properties of soils in Al-Husain District, Al-Dhalaa

Amani Ahmed Qardash and Muath Abdulmajeed Baabad

Biology Department, Faculty of Education –Aden, Aden University

Abstract

The laboratory analysis revealed the diversity of soils in the study area between soils (silt sand, sandy clay, silt sandy, silty clay and silty clay). This diversity in the soil of the lands of the studied areas offered an opportunity to identify the components of the soils of the agricultural lands that were under study, and they were an environment for cultivation of the *khat* plant.

The results of the physical analysis displayed that the soil cultivated with *Khat* in the study area was *alkaline*, so that the pH number ranged in all the studied samples from (7.18 - 8.42), while the field capacity in all samples ranged from (23.33- 35.66%). This is due to the difference in the type of soil from one region to another. It was noticed that the electrical conductivity was high, ranging from 218-442 mm / cm in the lands cultivated with *khat* than in the control groups due to the high salinity in irrigation water and the intensive use of fertilizers. It was also found that salinity is still high in the soil from which the Khat plant was removed.

The studied areas differed in containing nutrients. The concentration of the magnesium ion ranged from (0.14 - 0.29) mmEq / 100 g., and its concentration varied from one site to another. The calcium concentration in these soils was low to average, in general, in all sites and ranged from (0.25 - 0.12) mmEq / 100 g, as the clay soils contained a higher concentration of calcium than sandy soils. The sodium concentration was close in all the studied soil samples and ranged from (7.18-8.42) mmEq / 100 g. except in one site in which the sodium concentration increased greatly, while the potassium concentration ranged in all samples from (0.06-0.43) mmEq / 100 g.

The concentration of bicarbonate in the studied sites witnessed a clear variation, ranging from (0.15 - 0.28) mmEq / 100 g., as its concentration increased in all sites cultivated with *khat* than in the control groups, while the concentration of dissolved chlorine in the studied soil ranged from (0.8 - 0.19) mmEq / 100 g., where its concentration increased in two sites and was equal in two other sites. The variation in sulfate concentration was observed in the studied sites, which ranged from (3.9 - 4.4 (7mEq / 100 g. The nitrate concentration in the soils of the studied areas ranged from (14.33-23.66) PPM.

Key words: Effect - Mineral Elements - Properties - Chemical - Physical - khat plant - soil.

Taxonomic study for Lamiales order in Tuban Delta, Lahej Governorate, Yemen

[1]**Mazen Alawi Ali**,[2] **Abdul-Nasser Abdullah Al-Gifriand** [3]**and Othman Saad Al-Hawshabi***

[1]Dept. of Biology, Faculty of Education, Saber, Aden University, Yemen
[2]Dept. of Biology, Faculty of Education, Aden, Aden University, Yemen
[3]Dept. of Biology, Faculty of Science, Aden University, Yemen
*Email: othmanhamood773@yahoo.com

Abstract
This study deals with the Lamiales order taxonomically, in Delta Tuban, Lahej Governorate, Yemen, during the period from December 2013 to September 2019. The present study revealed the existence of 12 species within 9 genera belonging to six families of the Lamiales. The largest family is: Scrophulariaceae (2 genera and 3 species). This family

represents a high percentage (25%) of the total species of the studied area. The greatest genera recorded are:*Ocimum*, *Ruellia*and*Schweinfurthii* (2 sp. for each), these three genera represent about 50% of the total species recorded in the studied area. The most dominant life form is: Chamaephytes (5 sp.) with (41.67%)

The vegetative and reproductive characters proved that they are with high taxonomic values in identification and classification at the level of species, genera and families.

One of the remarkable finding in the present investigation is the recording of *Ruellia simplex* for the first time among the flora of Yemen.

Kew words: Taxonomic, Lamiales Order, genera, species, Tuban delta, Lahej

Taxonomic study on two Subfamilies of Caesalpinioideae and Mimosoideaein HabielJabbar District, Lahej Governorate, Republic of Yemen

[1]Abdul Hakeem Fadhel Al-Hageli   and [2]Othman Saad Al-Hawshabi*

[1]Dept. of Biology, Faculty of Education, Aden University, Yemen
[2]Dept. of Biology, Faculty of Science, Aden University, Yemen
Email: othmanhamood773@yahoo.com

Abstract

This aim of this is investigation to shed light on two sub-families Caesalpinioideae and Mimosoideae, in HabielJabbar District, Lahej Governorate, Republic of Yemen, during January 2018 to August 2019. An introductory order deals with the most significant features of two sub-families, synonyms, local names, distribution in study area, in addition to an artificial key for distinguishing between species and genera of the two sub-families in studied area, and up-to-date nomenclature for all studied taxa are presented.

The present study revealed the existence of 16 species within 6 genera belonging to two sub-families. The largest sub-family is Mimosoideae (11 species). This sub-family represents a high percentage 68.75% of the total species of the studied area. The greatest genera recorded were *Acacia* (8 sp.)And *Senna* (4 sp.), these genera represent 75% of the total species recorded in the studied area. The present results revealed that *Acacia hunter* is endemic to the flora of Yemen. The vegetative and reproductive characters proved that they are with high taxonomic values in identification and classification at the level of species and genera. It was also noted that the number of leaflets and pinnate pairs, flowers in racemes of inflorescences either spike or head, colour of flower, straight or twisted or falcate velvety pubescent pod, were found to be useful in distinguishing the members of genus *Acacia*.

Key words: Taxonomy, sub-families, Caesalpinioideae, Mimosoideae, genera, species, HabielJabbar, Lahej, Yemen.