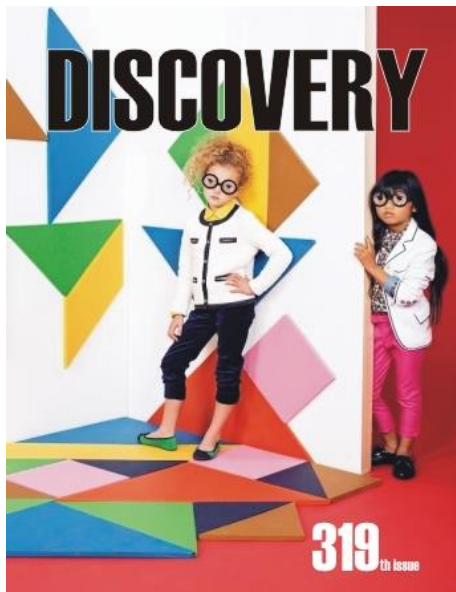


DISCOVERY

About the Cover



The study examined psychological impact of class duration on academics performance of Adeyemi college of Education' students in mathematics. A survey sampling procedure were used for the study and a total of three (300) students were selected as respondents. Questionnaire of eighteen (18) items was used in data collection. The data was analysed using t-test with the aid of Statistical Packages for Social Science (SPSS). The null hypotheses generated on the student interest, learning environment condition, student assimilation and class timing were rejected while their alternative hypotheses were accepted at 5% alpha level of significance. The findings reveal that, student love fixing their mathematics class in the morning than afternoon due to the fact that, they assimilate mathematics and mathematical concept faster at that time compare to other time. Conducive environment enhance teaching-learning process in view of this findings, government should provide schools with more teachers so that all mathematics and mathematical related subjects would be slated for morning and school site should be located in a conducive environment where teaching-learning process will be convenient for both teachers and students (Ref: Ajiyo KA, Idiong US. Psychological impact of class duration on students' academic performance in mathematics. *Discovery*, 2022, 58(319), 692-697).

Ritual Sanction in the Balinese Tradition of exiling the family of *Manak Salah* at Julah Village, Tejakula District, Buleleng Regency

I Nengah Lestawi

One of the interesting old Balinese tradition is known as “*Manak Salah*” (Bearing Wrong Children). In the tradition the family bearing “twins children with different sex” is exiled. This research found that the tradition is kept at the *Julah* village, although the regulation issued in 1951 by the Provincial Legislators has terminated it. At *Julah* the parents with such children take their family voluntarily to leave the village because they felt afraid of “the unseen spiritual punishment from the God” and believe that the ritual is influential.

Discovery, 2022, 58(319), 681-691

Psychological impact of class duration on students’ academic performance in mathematics

Ajiyo KA, Idiong US

The study examined psychological impact of class duration on academics performance of Adeyemi college of Education’ students in mathematics. A survey sampling procedure were used for the study and a total of three (300) students were selected as respondents. Questionnaire of eighteen (18) items was used in data collection. The data was analysed using t-test with the aid of Statistical Packages for Social Science (SPSS). The null hypotheses generated on the student interest, learning environment condition, student assimilation and class timing were rejected while their alternative hypotheses were accepted at 5% alpha level of significance. The findings reveal that, student love fixing their mathematics class in the morning than afternoon due to the fact that, they assimilate mathematics and mathematical concept faster at that time compare to other time. Conducive environment enhance teaching-learning process in view of this findings, government should provide schools with more teachers so that all mathematics and mathematical related subjects would be slated for morning and school site should be located in a conducive environment where teaching-learning process will be convenient for both teachers and students.

Discovery, 2022, 58(319), 692-697

SCIENCE

***In-vivo* anti-inflammatory activity studies of some p-nitrophenyl hydrazones**

Sodeeq Babalola, Nosakhare Igie, Isaiah Odeyemi, Abdullahi Y. Idris, Sanni YM, Asmau N. Hamza

The goal of this research was the discovery of newer anti-inflammatory drug. Four hydrazones with p-nitrophenyl moiety were synthesized by solvent-free and conventional synthetic methods with good to excellent yields. The synthesized hydrazones were evaluated for their anti-inflammatory activities using carrageenan-induced paw edema in mice. All the compounds indicated significant anti-inflammatory activity, demonstrating slow onset of action and longer duration of action compared to celecoxib and piroxicam; this characterized them as suitable for the treatment of chronic inflammatory diseases. Most of the compounds indicated superior anti-inflammatory activities compared to celecoxib and piroxicam after 4½ hours of inflammation induction. All the compounds demonstrated time-dependent anti-inflammatory activities. Compound 3b [1-(4-nitrophenyl)-2-(3,4,5-trimethoxybenzylidene) hydrazine] had the best activity, indicating time-dependent and dose-dependent activities during the studies. This suggests that the trimethoxy benzaldehyde moiety confers favorable pharmacokinetic properties to the compound. The hydrazones, especially 3b have been identified as lead compounds and are recommended for further *in-vivo* anti-inflammatory evaluations against other acute and chronic inflammatory animal models.

Discovery, 2022, 58(319), 698-706

Synthesis and Spectroscopic Studies of Dichloro p-Nitrophenyl Hydrazones: A Comparative Study

Sodeeq Babalola, Nosakhare Igie, Isaiah Odeyemi, Abdullah Idris, Sanni Yeken, Asmau Hamza

We conducted a comparative study on the development of two synthetic methods. The current study is the reaction of 4-nitrophenyl hydrazine with dichloro benzaldehydes (2,4-dichlorobenzaldehyde and 3,5-dichlorobenzaldehyde) under acid catalyzed solvent-based condition and solvent-free condition at room temperature. These reactions proceeded well under both conditions to give the corresponding hydrazone products in good to excellent yield (68%-72%) and in moderate to good yield (33%-57%) respectively without further column chromatography purification. Both methods had high atom economy (94.50%-94.84%). The solvent-free synthesis which is considered to be greener method developed in a bid to ameliorate the environmental adverse effects of the conventional solvent-based synthesis had lower E-factor (0.85-2.24 g/g) and higher effective mass yield (30.89%-54.13%) compared to those of conventional method’s (52.34-55.85 g/g) and (15.00%-16.42%). Conversely, the conventional method had higher but comparable reaction mass efficiency (63.83%-68.02%) to those of solvent-free method’s (30.89%-54.13%) but rather with better process mass intensity (91.09-97.33 g/g) in relation to those of solvent-free method’s (413.69-724.98 g/g) due to higher yields. The structures of the synthesized compounds were confirmed by FTIR, 1D, and 2D-NMR analyses. Universality and simplicity, catalyst-free conditions, non-use of an organic solvent, rapid reaction time, fast and efficient workup, and un-solvated pure products are only a few of the advantages of the developed solvent-free method.

Trends, instability and decomposition analysis of root and tuber crops in Nigeria (1981–2020): implications for food security

Ochoche CO, Abah D, Biam CK

This study assessed the trend, instability and variance decomposition of root and tuber crops and their implication on food security in Nigeria. The study basically relied on the use of time series data spanning from 1981 to 2020. Data on the variables for the study were collected from Food and Agriculture Organization (FAO) database. Data for the study were analyzed using trend graphs, Cuddy-Della Valle index (CDVI) and decomposition analysis. The result of the trend analysis showed that the mean area, production and productivity of root and tuber crops were 7747210 hectares, 66175248 tonnes, and 8.910 tonnes/hectares respectively during the period of the study. The study also revealed that instability in area cultivated was found to be 14.36%, production of root and tuber crops had instability index of 10.53% while productivity had instability index of 9.68%. The study of the decomposition analysis further revealed that the contribution of area effect was not only positive but also very high (103.98%). However, both productivity and interaction effects were negative and contributed -0.935% and -5.86% respectively to increase in root and tuber crops production in Nigeria. The study concluded that improving root and tuber crops productivity growth and reducing instability is vital towards the attainment of food security in Nigeria. The study therefore recommended that research, investment and technological innovations should be intensified in the root and tuber crops sub-sector in order to boost productivity and not merely increasing area cultivated so as to increase agricultural growth and reduce food insecurity.

Discovery, 2022, 58(319), 719-727

Assessment of Groundwater Quality for Potability in Southwest Karnataka, India

Bhagya Balakrishna Sharma, Kandikere Ramaiah Sridhar

Urbanization results in increased pressure on the availability of groundwater and reduce the water quality index (WQI) and its usefulness owing to various kinds of pollution. The current study assessed the physicochemical and biological qualities of selected groundwater in southwest India. The region selected is undergoing rapid urbanization, the development of educational institutions, hospitals, shopping complexes and small-scale industries. The population of the area has increased by 2-3 folds compared to the past two decades. Temperature, conductivity, alkalinity, turbidity, total hardness, total dissolved solids (TDS), chemical oxygen demand (COD), Cu, Cr, Na, K and Cl⁻ in groundwater studied were within the permissible limits throughout the year. The electrical conductivity (EC) exceeded the permissible limit. The Fe content in pre-monsoon was high, but diluted during monsoon season and reduced drastically in the post-monsoon season. The total coliforms showed a direct correlation with Fe content by increased most probable number (MPN). The pH, Fe and MPN values were not satisfied the yardsticks of the Bureau of Indian Standards (BIS). The F⁻, As and Pb levels were high during the post-monsoon season. The groundwater needs stringent purification for potability owing to coliforms, however, this water could be used for agricultural purposes.

Discovery, 2022, 58(319), 728-734

Growth performance of broiler starter chicks fed diets containing different levels of aqueous *Citrus aurantium* stem bark extracts

Alagbe JO, Ushie FT

Two hundred, 1-day old broiler chicks (Arbo acres) were used to evaluate the growth performance of broiler starter fed diets having different levels of aqueous *Citrus aurantium* stem bark (CASB). Birds were randomly distributed into 5 groups, each with 5 replicates consisting of 10 birds each in a completely randomized design. Treatment 1 (T1) basal diet + Ciprofloxacin 0.2 mL/litre of water, T2 (basal diet + 10 mL/litre CASB), T3 (basal diet + 20 mL/litre CASB), T4 (basal diet + 30 mL/litre CASB) and T5 (basal diet + 40 mL/litre CASB). Feed and water were provided *ad libitum* throughout the experiment which lasted for 21 days. Gas chromatography–mass spectrometry (GC-MS) was also carried out on CASB and the result revealed the presence of 23 bioactive compounds which accounts for 96.76 %. The most abundant secondary metabolite is D-limonene (50.06 %) followed by α -cubebene (8.49 %), linalool (6.02 %), β -citrylideneethanol (4.30 %), myrcene (3.44 %), α -longipinene (2.75 %), β -santalene (2.50 %), terpinen-4-ol (2.04 %), γ -eudesmol (1.93 %), α -pinene (1.71 %), Cis-4-thujanol (1.67 %), β -fenchol (1.40 %), γ -terpinene (1.10 %), carvenone (1.10 %), β -cayrophyllene (0.77 %), 4-methyl-2,3-hexadien-1-ol (0.17 %), capraldehyde (0.16 %), phytol (0.10 %), spathulenol (0.10 %), torreyol- α -cadinol (0.07 %), 3-methoxy-p-cymene (0.01 %) and β -Elemene (0.01 %) respectively. Average daily weight gain and feed conversion ratio were significantly ($P < 0.05$) different among the treatments. Feeding birds CASB 10 mL to 40 mL/liters increased the average daily feed intake though not significantly ($P > 0.05$). It was concluded that CASB is rich in several bioactive compounds with therapeutic properties and it could be fed to broilers up to 40 mL per liter of water without causing any deleterious effect on the performance of birds.

Discovery, 2022, 58(319), 735-741

Effect of mordants and mordanting methods on the dyeing property of anthraquinone based dye from *Rubia cordifolia*

Devi Priya M, Siril EA

Natural dyes are eco-friendly and sustainable source of colourants than its synthetic counterparts. The present investigation deals with extraction of anthraquinone based dyes from roots of *Rubia cordifolia* and its utilization in dyeing cotton fabrics using diverse mordants and mordanting methods *viz.*, pre, post or simultaneous mordanting. Dye bath was prepared by boiling the powdered

root in water at 100°C. Dyeing efficiency was tested using mordants like myrobalan, aluminium potassium sulphate, copper sulphate, ferrous sulphate or acetic acid. A wide range of colours/shades was produced. pH of dye bath before and after dyeing varied significantly among different mordants used. Percentage dye uptake due to various mordant was significantly ($P < 0.001$) varied on mordanting methods. Highest dye uptake (72.09 %) was recorded in myrobalan based post mordanting method. Wash fastness and rubbing fastness were in the range of 1/2nd–4/5th acceptable grades. Thus suggest the use of madder roots along with mordants to get flamboyant shades on cotton fabric.

Discovery, 2022, 58(319), 742-749

Comparison of different statistical procedures in selection of traits on bread wheat genotypes under low to mid Altitude

Tafesse Solomon

Ethiopia is one of the high wheat-producing countries in Africa. Production has increased over the years, but the country imports about 25 % of its internal consumption. To be wheat self-sufficient, the government of Ethiopia brings more areas under wheat production in irrigation agriculture. The wheat research program objectively works by targeting different wheat-producing agro ecology in the country to solve wheat production and productivity challenges. The national wheat research program introduced the 19th high-temperature wheat yield trial (19HTWYT) from the International Maize and wheat improvement center (CIMMYT), Mexico, in 2021. A total of fifty genotypes were tested at two locations. The design was alpha lattice design with two replications. Broad sense heritability (H^2) and correlation were computed. High heritability: For DTM $H^2 = 0.94$; For DTM $H^2 = 0.88$; for HLW $H^2 = 0.89$; and for GYLD $H^2 = 0.96$ observed in the result and moderate heritability obtained for PHT $H^2 = 0.77$ and for TKW $H^2 = 0.77$ on tested bread wheat genotypes at Kulumsa. But, for a trial conducted at Melkasa heritability were low for some traits: for DTM $H^2 = 0.52$; for PHT $H^2 = 0.16$; for TKW $H^2 = 0.12$; and for GYLD $H^2 = 0.47$ (Table 2). Grain yield had a negative non-significant genotypic correlation $r = -0.15$ with date of heading; Non-significant positive correlation $r = 0.11$ with date of maturity; Highly significant positive correlations $r = 0.61^{***}$ with Plant height; Highly significant positive correlation $r = 0.96^{***}$ with Thousand kernel weight; and positive significant correlation $r = 0.54$ with Hectoliter weight at Kulumsa (Table 4). Selection for traits of interest is one of the major activities in the generating bread wheat varieties for different wheat-producing areas. The application of noble evaluation techniques on genotypes selection leads to exploiting the best of the genetic potential for the trait intended.

Discovery, 2022, 58(319), 750-755

A survey of environmental and occupational hazards on the teaching and learning of science in Ankpa local government area of Kogi State, Nigeria

Akuh Mark Attah

The study surveyed environmental and occupational hazards in the teaching and learning of science in Science Secondary Schools in Ankpa Local Government Area of Kogi State. Four research questions were formulated to guide the study. Questionnaire survey was used with a sample of 55 respondents - 5 teachers and 10 students each from the five selected schools. A 10 items questionnaire each for students and teachers drawn from three research questions was constructed and used as instrument for data collection. Data collected were analysed by a simple percentage. The results of the study showed that chemical exposure, inhalation of toxic particles, parental attitudes, student threats, nuclear risks, office environments... and neglect, ignorance, unfavourable scientific progress, and so on affects teachers and students; and are hazardous to teaching and learning of science. Based on the results, there were a number of recommendations, which include among many others: Government's attention should be drawn to improving the living and health standards of science teachers and students since science is the bedrock to a developed nation, employment of educationally qualified and knowledgeable science teachers, formulation of curriculum that are minimally hazard-free despite the hazards in the teaching and learning of science etc.

Discovery, 2022, 58(319), 756-765

Impact of different sources of mulch on soil chemical properties of an ultisol in Umudike south east Nigeria

Uju EU, Omenihu AA, Ekpe II, Afangide AI

This research was conducted at the Teaching and Research Farm of Abia State University Umudike, to evaluate the impact of different sources of mulch on soil chemical properties of an Ultisol in Umudike South East Nigeria. The experiment comprised of five (5) treatments namely, Control = 0t/ha, R1 – Ricemill waste 10/ha, R2 - Ricemill waste 15/ha, S1 - Sawdust = 10t/ha, S2 - Sawdust = 15t/ha. The experiment was laid out in a Randomized Complete Block Design (RCBD) with the treatments replicated three (3) times to give a total of fifteen (15) plots. Raw data obtained was analyzed using analysis of variance (ANOVA) and significant means were separated using Fisher least significant difference (F-LSD) at probability level of ($P < 0.05$). The results obtained showed that total exchangeable acidity significantly ($P < 0.05$) reduced in mulched plots compared to the control. Soil pH, available phosphorous, total nitrogen, organic carbon and exchangeable cations of mulched plots were significantly ($P < 0.05$) higher than the control. Similarly, Effective cation exchange capacity (ECEC), percentage base saturation and C: N ratio was significantly ($P < 0.05$) higher when compared with the control. Sawdust application at the rate of 15t/ha significantly ($P < 0.05$) increased pH, organic carbon, available phosphorous, effective cation exchange capacity (ECEC), percentage base saturation and C: N ratio compared to control and ricemill at 15t/ha. However, Ricemill waste at 10t/ha and 15t/ha significantly ($P < 0.05$) increased soil total nitrogen and

sodium (Na) content compared to control and sawdust at different rates. Ricemill waste and sawdust mulch positively influenced soil chemical properties and could be recommended for enhancement of soil chemical properties in Umudike South East Nigeria.

Discovery, 2022, 58(319), 766-775

Distribution of copper and manganese in soils of different land use in Imo state, Nigeria

Ojogho Promise, Okonkwo Kenneth

Poor crop yield in southeastern Nigeria has been attributed to micro-nutrient deficiency. Properties of soil vary with land use system over time and the knowledge of these changes is vital for suitability food productivity. This work investigated the distribution of micro-nutrient elements (copper and manganese) in three different land uses in Imo state: namely Palm plantation (PP) fallow land (FL) and cassava (CP). Soils were collected from these land use types, air dried, sieved, using 2mm sieve and was analyzed using standard methods. The mean values of Organic Carbon, Total Nitrogen, Organic matter Available and Exchangeable Cation Exchange capacity were recorded as 0.45% 0.05% 1.04% 29.4ppm 2.49cmol/kg, 0.36%, 0.11%, 0.62% 39.8ppm 2.48cmol/kg and 4.46% 0.04% 0.66% 18.41% and 4.8cmol/kg for plantain plantation for CP and fallow land respectively. Data collected was subjected to analysis of variance (ANOVA) and significantly means were separated using least significant Difference (LSD) at 0.05 probability level. Relationship between micro-nutrients and soil properties were determined using correlation analysis. Results obtained showed variation in Total Nitrogen, Effective Cation Exchange Capacity (ECEC) and Available Phosphorus among the land use types. The highest concentration of Cu (0.0061mg/kg) was recorded in PP(40-60cm) depth while the highest concentration of Mn (0.071mg/kg) was recorded in PP(40-60cm) depth. Significant positive correlations existed between Cu and Al($r=0.789^*$) Cu and TEA($r=0.888^*$)Mn and Al($r=0.783^*$)Cu correlated negatively with sand($r=0.0345$) while Mn correlated negatively with silt ($r=-0.00146$). Agronomic practices that will improve soil organic matter and PH is recommended so that levels of the nutrient that are below the critical levels will be improved. Percentage CV shows little variation for sand in all depths. Clay was high in variation in all depths. 98.8% for palm plantation 89% for fallow land and 84.4% for cassava plantation respectively.

Discovery, 2022, 58(319), 776-783

Financial prospect of monoculture of exotic tree species in private land of Tangail District, Bangladesh

Md. Mijanur Rahman, Saleh Ahammad Khan

Acacia auriculiformis A. Cunn. ex Benth. is a popular choice while selecting exotic species for plantations in private and public lands in Bangladesh. Fast-growing nature and quick economic return are the major reasons for private landowners to prefer exotic tree species over the indigenous. This study, carried out in 2010-11, aims at analyzing financial prospects of exotic tree species plantations in Bangladesh. We evaluated 30 private woodlots plantations of *Acacia auriculiformis*, *Eucalyptus camaldulensis* Dehnh. and *Swietenia macrophylla* King in Sakhipur Upazila of Tangail District, Bangladesh. We employed Benefit-Cost Analysis (BCA) framework to calculate Benefit-Cost Ratio (BCR), Net Present Value (NPV), and Internal Rate of Return (IRR) for the plantations. For a 10-year rotation period, the BCR was 1.15. The NPV was BDT 84,074, whereas the IRR was 14.55%. The sensitivity analysis shows that the tree growers can withstand a maximum of 10% of damages of the final crops to keep the investments financially promising. The local people in the region are enthusiastic in such investment since such plantations were rewarding over time.

Discovery, 2022, 58(319), 784-799

Effects of land uses on soil organic carbon stock and soil total nitrogen stock in Anyigba, Kogi State, Nigeria

Paul Omaye Joseph, Ojomah Frank Ojochegbe

Soil organic carbon (SOC) and soil total nitrogen (STN) contents and stocks are crucial for enhancing soil quality and increasing C - reservoir. To understand how land use may impact these concentrations in the study area, Guinea savannah zone of Nigeria, we analysed the effects of different land uses (oil palm plantation, cashew plantation, forest land and arable land) on SOC and STNs in Anyigba. Soil samples (192) were collected from the land uses at different soil depths (0 – 15 and 15 – 30 cm) with three replications and analysed using standard methods. Land use significantly affected all parameters measured and depths. The study reveals that the effects of land use on SOC and STNs is greater in the topsoil than the subsoil. Oil palm plantation exhibited the highest SOC (7.21 %) and STNs (0.36 %). The content of SOC and STNs at 0 - 15 cm depth was in the order; oil palm plantation (7.21 %) > forest land (5.52 %) > cashew plantation (4.93 %) > arable land (3.84 %) and oil palm plantation (0.36 %) > forest land (0.28 %) > cashew plantation (0.25 %) > arable land (0.19 %) respectively, which revealed the potentials of oil palm plantation, forest land and cashew plantation for SOC and STN sequestration. The study provides land users with the information to improve soil quality, conserve C and N stocks for ecological sustainability and climate change mitigation by practising agroforestry.

Discovery, 2022, 58(319), 800-806

Phytoremediation of Heavy Metals and its Application: A comprehensive study

Sosale SM, Raju NS

Year after year, heavy metal concentrations in the environment are increasing. As a result, heavy metal-contaminated soils must be decontaminated to safeguard the environment and restore the ecosystem. Phytoremediation is a technique for cleaning up toxins in the environment that relies on natural processes. Plants aid in the removal of pollutants through several mechanisms, including absorption and concentration, pollutant transformation, stabilization, and rhizosphere degradation, in which plants promote the

growth of bacteria that break down toxins underground in the root zone. While the use of phytoremediation is on the rise, little. There has been focus on the ecological features of the plants used. This research investigated the possibility of using native plants to clean up soil while simultaneously providing benefits above ground, such as wildlife habitat. A relatively new technology is phytoremediation. With several advantages over traditional site clean-up methods. Some of the applications have only been tested in the lab or a greenhouse, while others have been field-tested to the point that they may be employed on a large scale. Phytoremediation was recently produced by engineers and scientists as a cost-effective and environmentally acceptable method of treating polluted areas using biomass/microorganisms or live plants. Only a few of the applications include Phytofiltration, phytostabilization, phytoextraction, and phytodegradation.

Discovery, 2022, 58(319), 807-816

ENGINEERING

Characteristics of Nitrate and Total Hardness on Sedimentation of Crude Oil Degradation in Stagnant Water Media

Ukpaka CP, Okirie FU

In this research the characteristics of nitrate and total hardness of contaminated water media was monitored in view with degradation and sedimentation due to action of the microorganisms present in the bio-reaction, which was subjected into stagnant condition. The variation in the concentration of the nitrate and the total hardness was monitored with respect to variation in time and depth as the dispersion occurs in the bio-reactor. Decrease in nitrate and total hardness concentration was observed in view of increase in time and depth of the stagnant water media. It is revealed that the variation in salt water medium was more significance compared to the variation in fresh water medium for both nitrate and total hardness concentration. The concentration of nitrate in salt water medium was higher than the concentration of nitrate in fresh water medium as revealed in this research and the high concentration of the nitrate favours the microbial activity in the bio-reaction, because the organisms uses the nitrate as a source of nutrient for cartelizing the degradation process of total petroleum hydrocarbon in the stagnant water media. Similarly, the degree of the total hardness concentration in the bio-reactor was reduced due to the dispersion, sedimentation and biodegradation processes that occurs. However, this investigation has predicted the significance of nitrate and total hardness characteristics of crude oil degradation in stagnant water media.

Discovery, 2022, 58(319), 817-823

Demonstration of Biokinetics Coefficient of Total Petroleum Hydrocarbon Degradation in Stagnant Water: The concept of LineWeaver Burk Plot

Ukpaka CP, Okirie FU

The biokinetics of total petroleum hydrocarbon was illustrated in relationship with the LineWeaver Burk Plot concept of the Micheal's Menten and Monod's model for salt and fresh water media in a stagnant water sedimentation. The maximum specific substrate rate and the equilibrium or dissociation constant of substrate was demonstrated in this investigation for sampling points of PT1, PT2 and PT3. The equation of the linear curve was established revealing the values of slope and intercept, which was expressed in terms of $1/U_m$ equated to intercept and km/U_m equated to slope. The reliability of the root of the best fit is within the range of 63% to 91%, with the highest percentage of acceptable value in salt water in total petroleum hydrocarbon degradation.

Discovery, 2022, 58(319), 824-827

Monitoring of Total Petroleum Hydrocarbon Degradation in Stagnant Water Media with the Application of First Order Kinetics

Ukpaka CP, Okirie FU

Prediction of total petroleum hydrocarbon was monitored in a stagnant water media of salt and fresh was examine with the application of first order kinetics. The research demonstrates the factors that influence the total petroleum hydrocarbon degradation rate to the physicochemical parameters as well as the microbial activity. However, the degradation rate of the TPH was more in salt water than fresh water medium as revealed in this investigation. The developed model was resolved using the necessary boundary conditions and the result obtained demonstrates the relationship between the $\ln(CTPH)$ with variation in time. This research has revealed that first order kinetics is a good tools for monitoring, predicting and simulation of total petroleum hydrocarbon degradation in stagnant water environment under the influence of sedimentation process.

Discovery, 2022, 58(319), 828-838