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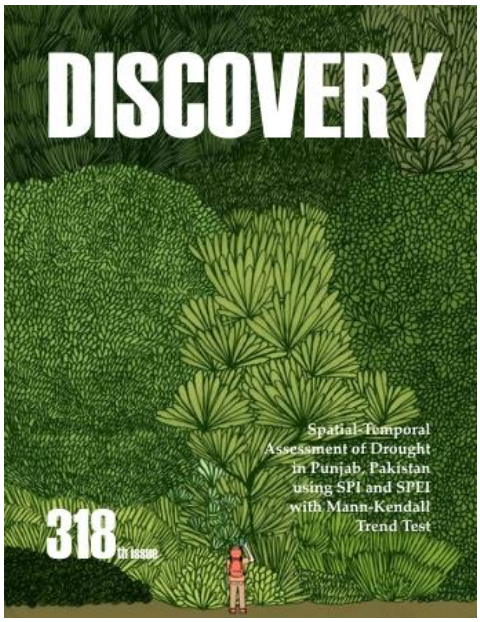
DISCOVERY

About the Cover



Highly rainfall variations create problems of floods and droughts in any region. This study focuses on spatial rainfall variability and drought assessment in Punjab province of Pakistan using Standardized Precipitation Index (SPI) and Standardized Precipitation Evapotranspiration Index (SPEI). Various indices like standard deviation, Variance were calculated from annual rainfall of 16 meteorological stations during period of 1960–2015. Mann-Kendall technique was applied to check the trend for both SPI and SPEI. Out of 16 meteorological Stations under study D G Khan, Gujranwala, Jhang, Sargodha, Mandi B D and Sahiwal show a decreasing trend in annual temperature. On the other hand, Faisalabad, Jhelum, Lahore, Multan and Sialkot show an increase in trend of annual temperature. Remaining met. Stations show a linear or no trend. Out of 16 meteorological Stations 6 show an increasing trend in annual precipitation, 3 show a decreasing trend and the remaining show no trend in data at all. The analysis of SPI and SPEI results are showing that there was dry period at different time in historic data of Punjab. Almost all the Station or regions show dry period from 1965 to 1975 and then a dry period can also be seen in all the Punjab from 1999 to 2007 according to SPI results According to SPEI results all the Punjab is under dry spell from 1999 to 2015 (Ref: Ghouri AY, Rasheed F. Spatial-Temporal Assessment of Drought in Punjab, Pakistan using SPI and SPEI with Mann-Kendall Trend Test. *Discovery*, 2022, 58(318), 489-514).

Spatial-Temporal Assessment of Drought in Punjab, Pakistan using SPI and SPEI with Mann-Kendall Trend Test

Ahmed Yaseen Ghouri, Fahad Rasheed

Highly rainfall variations create problems of floods and droughts in any region. This study focuses on spatial rainfall variability and drought assessment in Punjab province of Pakistan using Standardized Precipitation Index (SPI) and Standardized Precipitation Evapotranspiration Index (SPEI). Various indices like standard deviation, Variance were calculated from annual rainfall of 16 meteorological stations during period of 1960–2015. Mann-Kendall technique was applied to check the trend for both SPI and SPEI. Out of 16 meteorological Stations under study D G Khan, Gujranwala, Jhang, Sargodha, Mandi B D and Sahiwal show a decreasing trend in annual temperature. On the other hand, Faisalabad, Jhelum, Lahore, Multan and Sialkot show an increase in trend of annual temperature. Remaining met. Stations show a linear or no trend. Out of 16 meteorological Stations 6 show an increasing trend in annual precipitation, 3 show a decreasing trend and the remaining show no trend in data at all. The analysis of SPI and SPEI results are showing that there was dry period at different time in historic data of Punjab. Almost all the Station or regions show dry period from 1965 to 1975 and then a dry period can also be seen in all the Punjab from 1999 to 2007 according to SPI results According to SPEI results all the Punjab is under dry spell from 1999 to 2015.

Discovery, 2022, 58(318), 489-514

Advance and Registration of a New Bread Wheat Variety Shaki (ETBW9089) for Mid to High Altitude Wheat Producing Areas of Ethiopia

Tafesse Solomon, Negash Geleta, Abebe Getamesay, Alemu Dabi, Gadisa Alemu, Abebe Delesa, Habtemariam Zegye, Rut Duga, Birhanu Sime, Zerhun Tadesse, Dawit Asnake, Bayisa Asefa, Demeke Zewedu and Niguse Degefa

Ethiopia is one of the highest wheat-producing countries in Africa. With 5.5 metric tons of wheat production in 2020, the country ranks 24th in the World and 2nd in Africa. Although the potential for wheat production in the area, production is reduced by fungal wheat rusts. During the epidemic year, wheat rust causes damage to the crop and results in a high reduction in wheat production. The national wheat research program objectively works in developing and releasing bread wheat variety with wheat rust disease resistance, high grain yield, and good wheat quality. In Bread Wheat National Variety Trial for Optimum Area Set I (BWNVTOASETI), Twenty -three advanced elite bread wheat lines and two checks: one local check and one standard check; as a whole, twenty-five genotypes were tested across six locations in 2018 and 2019 for two years by the national wheat research program. The Trial was conducted in square lattice design with three replication at all locations. The experimental unit was a plot of six rows with 2.5m in length by 1.2 m in width. The analysis of variance ANOVA is done to determine the effects of genotypes, environment, and their interaction on grain yield. Yield mean separation computed to differentiate the potential among the genotype. Compared to the yield of the checks, ETBW9089 and ETBW174464 were significantly different at ($p<0.001$) from the checks: Wane and Lemu. ETBW9089 has better disease resistance and grain yield. Therefore, the program was decided and proposed as a candidate variety for the 2020 cropping season. The NVRC accepted the recommendation From TC and released ETBW9089 as a new variety for mid to highland wheat-producing areas. The success of the wheat breeding program in Ethiopia mainly depends on the sustainably avail new technology and deliver more alternative bread wheat varieties for the farmers with a good quality foundation seed.

Discovery, 2022, 58(318), 515-523

Formalin levels in locally produced and imported meat and fish samples from meat shops situated within Enugu metropolis, Enugu State, Nigeria

Aniobi CC, Offor CR, Akagha IC, Okeke O, Okoro MU

Studies were carried out to evaluate the levels of formalin in the locally produced and imported meat and fish samples from meat shops situated within Enugu metropolis, Enugu State, using analytical procedures and instrumentation. The samples were thawed, homogenized with trichloroacetic acid and assayed for formalin determination using UV/ Visible spectrophotometer. Formalin were not detected in the locally produced cow and goat meat samples. The mean levels of formalin in the locally produced chicken meat, imported chicken meat, imported turkey meat, imported horse mackerel fish, imported mackerel fish, locally produced cat fish, imported chicken gizzard, and locally produced chicken gizzard samples were 12.16± 0.01, 114.22±10.25, 106.02±8.42, 146.42±6.36, 130.06±15.43, 80.17±7.26, 85.29±4.11 and 3.02±0.24µg/g respectively. The food samples contained mean formalin levels in the following decreasing order; imported horse mackerel fish > imported mackerel fish> imported chicken meat> imported turkey meat > imported chicken gizzard>locally produced cat fish> locally produced chicken meat> locally produced chicken gizzard. The formalin levels in the imported meat and fish samples were statistically higher than the locally produced samples. The mean levels of formalin in the imported mackerel horse, chicken meat, turkey meat and mackerel fish samples from the meat shops situated within Enugu metropolis were above the recommended permissible limits. The consumption of these food items is therefore a serious health risk especially over a prolonged exposure, considering the health debilities associated with high dose of formalin to animals and by extension humans.

Discovery, 2022, 58(318), 524-529

Levels of polycyclic aromatic hydrocarbons in soils situated around fuel stations in Nibo, Awka South L.G.A., Anambra state

Okeke O, Akagha IC, Offor CR, Okoro MU, Aniobi CC

Studies were carried out to investigate the levels of selected polycyclic aromatic hydrocarbons in the soils situated around fuel stations in Nibo, Awka South Local Government Area of Anambra State following preparation procedures and Gas chromatographic instrumentation. The soil samples at site P1 had mean levels of 0.18±0.06, 0.11±0.02, 0.27±0.03. 0.40±0.17 and 0.20±0.06mg/kg for anthracene, phenanthrene, chrysene, pyrene and benzo(a) anthracene respectively. Soil samples at site P2 had mean levels of 0.49±0.06, 0.16±0.01, 0.22±0.04, 0.02±0.01, 0.27±0.06 and 0.39±0.05mg/kg for anthracene, acenapthene, phenanthrene, chrysene, pyrene and benzo(a)anthracene respectively. The control soil samples had mean levels of 0.04±0.02, 0.02±0.01, 0.07±0.02 and 0.06±0.01 mg/kg for phenanthrene, chrysene, pyrene and benzo(a)anthracene respectively. The mean levels of the investigated PAHs in the soil samples at sites P1, P2 and control were statistically significant and within the recommended threshold limits. The soil samples predominantly had higher mean levels of the investigated high molecular weight PAHs than the low molecular weight PAHs. The values obtained from the diagnostic ratios of the investigated PAHs suggests that the sources of contamination of the soil samples with PAHs were predominantly pyrolytic than petrogenic.

Discovery, 2022, 58(318), 530-536

Seasonal variations of gaseous and particulate pollutant in different location of urban Bangalore

Shyni Prabhakaran N, Venkataramana GV

To understand how air pollution varies in emerging countries like India and its capital cities, monthly air-quality data with high temporal and geographical precision is necessary. For many Indian cities, yearly fluctuations in air pollution are still indeterminate. Spatial and temporal variations of seven air pollutants in fifteen monitoring station across the metropolitan city Bangalore during the year 2018 were analysed. The annual mean mass concentrations of $PM_{2.5}$ and PM_{10} were 63.1 ± 18.9 μg m^{-3} and 90.8 ± 18.4 μg m^{-3}, respectively, exceeding the Indian National Ambient Air Quality Standards established by the Central Pollution Control Board. The annual mean concentrations of SO_2 were 2.36 ± 0.1 μg m^{-3}, NO_2 31.34 ± 3.7 μg m^{-3}, CO 1.13 ± 0.2 μg m^{-3}, NH3 23.97 ± 3.7 μg m^{-3}, and lead values are 0.24 ± 0.5 μg $m^{-3}$are below the national limit. Saneguruvanahalli and Banasawadi Police Stations had lower concentrations of air pollutants, except for $PM_{2.5}$, than other stations in Bangalore, resulting in better air quality. Seasonally, the maximum $PM_{2.5}$ concentrations were found at ITPL Whitefield in the spring, followed by the autumn seasons. This analysis provides the basis for the pollutant to be considered in the formulation of future Bangalore air mitigation strategies.

Discovery, 2022, 58(318), 537-545

Acute and subchronic toxicity effect of *Momordica charentia* methanol leaf extract in albino rats

Jude Nwaogu, Isah Musa Fakai, Ogbo John Ogbale, Abdulhamid Zubairu

Indigenous plants with medicinal properties have long been used in different folkloric systems globally. However, there is significant requirement to provide scientific explanation on the toxicological effect of medicinal plants before accepting them in folkloric system. This article is aimed to evaluate acute and subchronic toxicity of methanol leaf extracts of *M. charantia*. Phytochemicals screenings were assayed using standard methods, while acute and subchronic oral toxicity of was evaluated in albino rats as per OECD guide line. Phytochemical analysis of extract showed the presence of, alkaloids, flavanoids, phlobatannin, saponins, glycosides, terpenoid and Phenols, the LD50 of extract is above than 5000 mg/kg. Subchronic oral toxicity assayed in liver revealed a significant reduction ($P<0.05$) in AST in all the treated groups when compared to normal control group except group treated with 1500mg/kg which it's reduction is not significant ($P>0.05$), ALT showed a significant increase ($P<0.05$) in all the treated groups except group treated with 500mg/kg which it's reduction is not significant ($P>0.05$) compared to the normal control group. ALP biomarkers on the other hand significantly ($P<0.05$) increases in groups treated with 250and 500mg/kg compared to normal control group while group treated with 1000mg/kg significantly decrease ($P<0.05$) when compared with control group. ALB and TP revealed significant ($P<0.05$) decreases across all groups compared to control. However, total bilirubin and direct bilirubin revealed significant ($P<0.05$) increases only at groups treated with 250mg/kg respectively. While in results for kidney function, Urea revealed significant increase ($P<0.05$) in groups treated with 500, 100 and 1500mg/kg compared to control. Creatinine and uric acid significantly increase ($p>0.05$) only at group treated with 250mg/kg and 1000mg/kg compared to control respectively. Na+ significantly ($P<0.05$) increases across all extract treated groups compared to control. However there was no significant ($P>0.05$) deference in K+ of all extract treated compared to control. While, Cl- revealed significant decreases at groups treated with 500 and 1500mg/kg compared to control. However Urea and Uric acid showed significant increases at groups treated the higher doses when compared to control. In haematological indices (WBC), (LYM), (GRA), (RBC), (HGB), (MCV), MCHC, PLT and PCT parameters does not significantly ($P<0.05$) differ compared to control. In conclusion, with regard to the findings of the present studies the subchronic oral administration of *M. charentia* extract for 28days does not cause any toxic effect on liver enzymes, kidney function parameters, as well as heamatological parameter.

Discovery, 2022, 58(318), 546-558

Changes in foliar nitrogen, phosphorus and potassium levels of sugarcane varieties due to rates and split applications of nitrogen fertilizer

Oindo Achieng G, Okinda Owuor P, Crispin O Omondi, Gordon O Abayo

Leaf analysis is widely used for diagnostic purposes, as a means to formulate fertilizer recommendations and to ascertain nutrient trends. Whereas various parts of the plant can be used for tissue sampling, the third top-visible dewlap leaf without its midrib is usually the tissue of choice for assessing the nutrient status of sugarcane. Sample collection is based on the right period and satisfactory age of the cane. This study was aimed at determining the effect of nitrogen fertilizer applied either in single or split to ratoon crop of new (D8484) and old (CO421) varieties on leaf N, P and K levels. The experimental design was a 2x4x3 split split-plot at the Sugar Research Institute, Opapo, situated in the western part of Kenya. Standard methods were applied to examine the levels of leaf nutrients. The results showed significant differences ($p \leq 0.05$) in leaf %N levels as a function of sugarcane varieties from the 5th to 10th month after ratooning (MAR). Leaf %N in both varieties reached their peak at the 5th MAR thereafter decreased. In the 3rd and 4th MAR, the levels of nitrogen in the two varieties were similar. In CO421, except for 6th MAR, there were significant ($p \leq 0.05$) responses in leaf nitrogen to nitrogen fertilizer application rates. The 120 kgN/ha had high ($p \leq 0.05$) leaf nitrogen in this variety than other rates. Indeed, except in the 5th MAR, other rates did not record significant responses. In D8484, significant ($p \leq 0.05$) responses in leaf nitrogen to rates of nitrogen were recorded in the 3rd, 5th and 9th MAR. There was no clear pattern of the responses to nitrogen rates in this variety. For the mean, conflicting response patterns observed in the two varieties caused lack of response in leaf nitrogen to nitrogen rates in most months. Sporadic significant ($p \leq 0.05$) effects were observed due to split application in the two varieties at some sampling dates. Except in CO421, splitting nitrogen application generally had no effect on leaf nitrogen levels. There were no varietal differences in leaf P up to the 7th MAR. In both varieties, significant ($p \leq 0.05$) variations were observed in leaf P due to rates of nitrogen fertilizer. However, the order was sporadic and did not follow any pattern. Peak leaf P levels were observed at the 4th MAR with the levels falling after this period. Generally, split application of nitrogen fertilizer rates only sporadically influenced leaf P levels. Apart from the 7th and 10th MAR, there were significant ($p \leq 0.05$) differences in leaf K levels due to varieties. In general, variety D8484 had higher leaf K levels than CO421. Significant ($p \leq 0.05$) variations were only observed from 3rd to 5th MAR. Similarly, for the mean, the significant variations were observed in the 3rd, 4th and 5th MAR. Peak leaf K levels were recorded at 5th MAR. Generally, nitrogen rates of 0 and 120 kgN/ha caused decline in the leaf K levels. The responses in leaf K levels due to splitting nitrogen fertilizer application appeared to be sporadic though significant ($p \leq 0.05$) especially in the early MAR in both varieties. The pattern appeared clearer in D8484 from 3rd to 5th MAR in which leaf K was higher where nitrogen had been split into two. It is concluded that leaf sampling and nutrients analysis should be done before 5th MAR.

Discovery, 2022, 58(318), 559-578

Antibacterial activity of some plant extracts alone and in combination with antibiotics against multidrug resistant potential pathogenic bacteria from sewage water in Kolkata, India

Ripan Chandra Das, Shyamapada Mandal

Reports are available on multidrug resistant (MDR) potential pathogenic bacteria from industrial sewage from different parts of the globe. This study explores the antibacterial activity of plant extracts as well as phytochemicals against bacteria isolated from sewage-water from Kolkata (West Bengal), India. Methanolic extract of *Plumbago zeylanica (Plumbaginaceae), Costus specious (Costaceae)* and *Clerodendrum indicum (Lamiaceae)*, using different concentrations, were tested against five sewage bacteria from Kolkata, India: DC-1, DC-4, DC-8, DC-9 and DB-11, (selected on the basis of their highest antibiotic resistance out of total 30 isolates) by agar-well diffusion method. Three plant extracts viz. *Plumbago zeylanica (leaves) and Costus specious* (rhizome*) and Cerodendrum indicum* (leaves) were tested in combination following checker board agar dilution method. The antibiogram for the test bacteria were determined by disc diffusion method using five antibiotics. All the test bacteria were resistant to chloramphenicol (30μg/ml) and ampicillin (10 μg/ml). Among the three plants *Plumbago zeylanica* showed remarkable antibacterial efficiency even at 250μg/ml against the test bacteria. In combination the plant extracts had better activity against DC-4 and DC-8 strains. Phytochemicals individually and in combinations showed antibacterial activity against sewage bacteria that are potential to cause human infection. Current findings help understand in developing non-antibiotic treatment protocol. However, this require further studies (purification of active phytochemicals, detection of combinational products and their mode of action) to be used as therapeutics.

Discovery, 2022, 58(318), 579-587

ENGINEERING & TECHNOLOGY

Monitoring of some Physicochemical Properties of Stagnant Water Environment Contaminated with Crude Oil

Ozioko FC, Ukpaka CP, Amadi SA, Ikenyiri PN

Characteristics of some physicochemical properties were monitored in a stagnant water environment contaminated with crude oil. The contaminates experience the effect of microbial action, which resulted to the degradation of the crude oil as well as the variation in the physicochemical properties of the selected components analgised and investigated in this research. However, the parameters monitored are total dissolved solid, conductivity and pH with the characteristics of pH revealing a decrease in value for Salt water and increase in fresh water environment for crude oil degradation. Indeed, in terms of conductivity value showcase the characteristics of both media to have experienced decreased with increase in time. The total dissolved solid (TDS) experienced increase with increase in time for salt water environment and in case of fresh water environment decrease in TDS was experienced

with increase in time. Finally, these characteristics was observed to have enhanced the rapid growth of the microorganisms and mitigate degradation of the crude oil concentration in the process.

Discovery, 2022, 58(318), 588-596

Learning on the Smart Campus Information System

Myat Mon Khaing, April ThetSu, Khin Shin Thant, Thet Thet Aung, Hlaing Htake Khaung Tin

Smart Campus is a combined campus situation of work, study and living based on the (IoT) Internet of Things such as WIFI, CCTV, Sensor and Internet. Digital transition is widespread among many sectors of society. University needs to build a modern and developed country to emerge innovative scholars, science and technology experts. ICT and IoT technology installations play a significant role in developing the human resources. The aim of this research is to emerge academics, promote them as international standard research-based universities and to promote the role of smart campus. A smart campus provides experiences using advanced network infrastructure and Internet connected devices and allows universities to make insight driven decisions to improve security and maximize resources. This research was done to help the emergence of a smart campus information system. This research paper was written in order to gain a lot of knowledge about the smart campus. It can make it easier to make a smart university.

Discovery, 2022, 58(318), 597-602

Application of Condition Based Maintenance with Reliability Technique to Reduce Failure of a Rotating Equipment: A case Study

GOMBA Samuel Olloo, Ukpaka CP, Nkoi B

This study seeks to use reliability techniques to appraise condition based maintenance technique of a rotating equipment (reciprocating compressor). The reciprocating compressor used for hydrogen compression at the polypropylene plant of Indorama/Eleme Petrochemical Limited, Aleto Eleme, Rivers State was used as a case study. Five parts of the reciprocating compressor were investigated. They include Bearing, Connecting rod, crank shaft, Piston and discharge valve. The reliability analysis study was carried out for a period of five years from January 2016 to December 2020. The investigations showed the mean time between failure, failure rate, downtime, lost time to repair, reliability, unreliability and availability of the components parts of the compressor. The study presented decrease in reliability of some parts. For example the reliability of bearing component reduced from 13.54% to 1.804%, the connecting rod reduced from 13.62% to 1.879%, crank shaft reduced from 13.54% to 1.828%, Piston reduced from 13.54% to 1.828%, discharge valve reduced from 13.54% to 1.828% within the period of five years. This research work recommends that the compressor should be readily available for replacement in the inventory and the storeroom to reduce the downtime in a year as well as enhance productivity. Maintenance personnel should always look out for spares to reduce downtime and always carry out preventive maintenance as at when due. This will reduce failure and increase availability of the equipment.

Discovery, 2022, 58(318), 603-622

Performance Evaluation of the Compressor Unit of a Gas Plant: A Case Study of Tunnu Gas Booster Station

NWIBARI Emmanuel Cletus, Dagde KK, Ukpaka CP

This research work presents the results of Performance of a compressor unit carried out on Tunu Booster Station facility. The coefficient of performance, isentropic efficiency and power supply to the compressor unit was evaluated from the Gas plant. The effects of the compressing system was investigated by using thermodynamics models to compare the performance of the existing system. The results indicated that the power of the compressor, isentropic efficiency and coefficient of performance of the compressor gave values of 33899kw, 0.83 and 1.2. The deviations from the existing plant values were 35.6%, 31.7% and 20% respectively. Other parameters that were evaluated include the failure rate (λ) and the mean time between failures (MTBF). During the evaluations, unexpected breakdowns, decrease in productivity and high maintenance cost associated with gas compressing system failures were minimized by using maintenance models to checked the performance of the compressor. The fault tree analysis (FTA) was primarily employed to evaluate the root cause of failure of previous gas compressing systems performance while the linear regression model derived from Weibull's exponential distribution was employed to obtain the shape and scale parameters. The results of the Failure rate function and the mean time between failures (MTBF) of the system obtained shows that the failure rate (λ) for the existing and proposed models were 0.016% and 0.052% estimated at 1 failure/year during its 7200 hours of operation. Also, the gas compressing system's probability of failure and the mean time between failures (MTBF) were 34.5% and 4.12 years respectively for the proposed model. Results also indicated that the performance of the system were 65.5% and 51.3% in the proposed and existing models respectively for 7200 hours operation yearly. This also confirms the fact that the proposed model had significant improvement when compared to the existing model.

Discovery, 2022, 58(318), 623-636

Review and Practical Processes on Rammed Earth Wall Construction

Mezie EO, Ezema MN, Mmeka PT

A review of rammed earth wall (REW) construction was carried out in this paper. Rammed earth (RE) has been used for construction in ancient times. The use of REWs in building construction was reduced with the advent the modern construction

materials such as concrete, steel, timber, polymers etc. With the increasing effect of green-house effect of which modern buildings and building materials have significant contribution, efforts are on board to revive and re-invent sustainable means of building houses. Among the various options available, REWs is adjudged one of the cheapest means to achieve sustainable buildings especially for the poor and those living in the rural areas. The origin, and types of REWs were reviewed. The codes/documents for REWs, construction techniques, materials, applicable tests, construction processes, stabilisers, cost implication, merits and demerits of REWs were all reviewed in this paper. The paper would be a good source of information on REWs and would also enable further researches on REWs construction aimed at improving its understanding and acceptability.

Discovery, 2022, 58(318), 637-653

SOCIAL SCIENCE

Prevalence and ergonomic risk factors of musculoskeletal disorders in a farm of Bindura, Zimbabwe

Chido Tapuwanashe Mhlanga, Reginald Dennis Gwisai

There is an increase in body discomfort complaints (upper limbs) amongst farm employees. Farm records reviewed, explain lack of adequate identification, monitoring and evaluation of ergonomic risks. Operations in a farm are physically demanding with more common work related challenges which may lead to Musculoskeletal Disorders (MSDs). Furthermore, National Social Security Authority (NSSA) reports reveal more pronounced work – related musculoskeletal disorders in the agricultural sector and scanty interventions. The trend of risk factors for MSDs in the farming community has not been adequately investigated in low and low-middle income countries. Therefore, a study among 30 participants (15 farm employees, 10 students and five lecturers)working at the Bindura University of Science Education farm was carried out through the usage of the Rapid Upper Limb Assessment (RULA) technique to identify awkward postures resulting in MSDs and the Nordic Musculoskeletal Questionnaire in order to identify body discomfort association to work postures. The cross – sectional census study was conducted as an experimental and observational research. The study employed purposive sampling through media capturing in five departments (piggery, cattle, teaching and learning unit, poultry and the field). Results indicated that the piggery and teaching and learning unit had the highest scores in awkward postures in the right and left hand sides. However, the right hand side had the highest mean (5.30±1.4) than the left hand side (5.03±1.4). The teaching and learning unit had the highest frequency of perceived body discomfort (68.82%).Two age groups were used, and the age group (≥32) had the highest body discomfort response mean of (20.40). The most affected body part was the lower back with (79.89%). Furthermore, females reported the highest body discomfort (19.33) than males with a significant difference at $P \leq 0.05$. In conclusion the Bindura University of Science Education farm employees are at an extreme risk of developing musculoskeletal disorders. This is underpinned by awkward postures which result in high levels of body discomfort. This has subsequent implications on productivity levels at the farm.

Discovery, 2022, 58(318), 654-666

Poverty and access to healthcare services among rural households in Osun state, Nigeria

Oyerinde IA, Aletan OE

The purpose of this research was to look at the effects of poverty on access to health care services among rural families in Osun state. The study's overarching goal was to identify household characteristics that influence healthcare service selection, as well as the amount of accessibility of rural households to healthcare facilities. Structured questionnaires were used to obtain primary data. For the selection of 160 rural families, a multistage sample strategy comprised of systematic random and purposive sampling procedures was used. Descriptive statistics and the Chi-square test were used to analyze the data obtained to get a conclusion and policy suggestions. The findings of this study indicated that the majority of respondents (38.1 percent) had a secondary school education and that farming was their primary employment. Seventy-five percent of respondents had access to public health centers, but the majority (37.5 percent) travel a distance of 5-9.9 kilometers before seeking health care. Finally, it was suggested that relevant health authorities update their data and ensure that it is in sync with population trends. This would help the government, policymakers, and concerned stakeholders identify villages or settlements in need of immediate healthcare assistance. It was also urged to the government that measures such as health insurance schemes, mobile healthcare delivery, and care for the elderly, among others, be made accessible and cheap to all people, regardless of class, position, or location.

Discovery, 2022, 58(318), 667-680