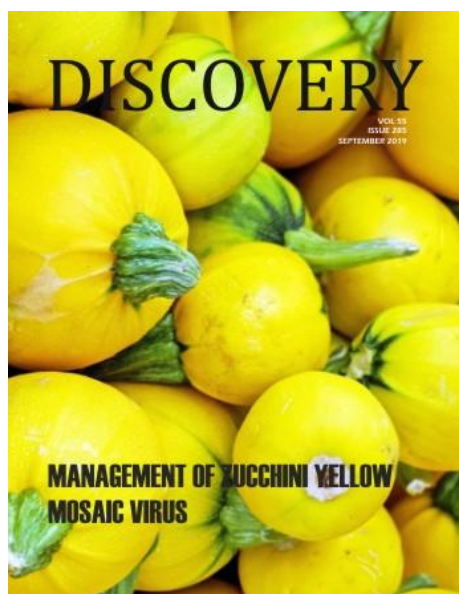


DISCOVERY

About the Cover



An experiment was conducted to test the efficacy of eco-friendly and commercial antiviral products for the management of Zucchini yellow mosaic virus of zucchini squash at Plant Pathology Division Khumaltar, NARC. The experiment was conducted using a randomized complete block design with eight treatments namely Garlic clove extracts@ 50ml/lit, Victovirus@3ml/lit, Bougainvillea leaf extracts@200ml//lit, Viricon-H@3ml/lit, Cow–urine@200ml/lit, Anti-Vs@1gm/lit, Control and Yoghurt extracts@25ml/lit, each replicated for three times. Seedlings were transplanted with 100cm x 75cm spacing in 2.25m² plots, accommodating 4 plants in each plot. The plots were inoculated with ZYMV before the application of treatments. The first spray of treatments was done after 15-20 days after transplanting followed by second, third and fourth and fifth sprayings at 7 days intervals. In control plots, water sprayed with equal volume instead of plant extracts. Observations were recorded weekly on first appearance of disease, disease incidence, disease severity and yield of fruit. Symptoms were recorded at regular interval in all the treatments on the basis of visual observations. The scale used for scoring diseases was 1-5. During 2016, highest severity was found in Control plot (55%) and least in cow urine treated plot (27%). In 2017, highest severity was found in Control plot (65%) and least in yoghurt treated plot (30%). In both the year cow urine 200ml/litre was found most effective to minimize the zucchini yellow mosaic virus and increased the yield. The highest percent disease control was found in cow urine treated plot in both years (Ref: Bimala Pant, Sharada Joshi, Chetana Manandhar, Shrinkhala Manandhar, Suraj Baidya. Efficacy testing of eco-friendly and commercial antiviral products for the management of Zucchini Yellow Mosaic Virus. *Discovery*, 2019, 55(285), 484-489).

Chloride ingress-moisture content in pre-conditioned concrete cubes

Balakrishna MN, Robert Evans, Fouad Mohamad, Rahman MM

The chloride contamination will occur from the application of de-icing salts. It was confirmed that the application of de-icing salts caused a significant reduction in structural and serviceability reliabilities. The chemicals used in the snow and ice control operations (de-icers) may cause corrosion damage to the transportation infrastructure such as reinforced/pre-stressed concrete structures and steel bridges. There are many ways to manage the corrosive effects of de-icers, such as selection of high-quality concrete, adequate concrete cover and alternative reinforcement, control of the ingress and accumulation of deleterious species, injection of beneficial species into concrete, and use of non-corrosive de-icer alternatives and optimal application rates. In fact, snow and ice on streets and highways are a major threat to human life and limb. Traffic accidents and fatalities climb as snow and ice reduce traction on roadways. Lengthened emergency response times create additional risks for persons in urgent need of medical care, particularly in cases of heart attacks, burns, childbirth and poisoning. Thus the de-icing salts are necessary to provide safe winter driving conditions and save lives by preventing the freezing of a layer of ice on concrete infrastructure. However, the safety and sense of comfort provided by these salts is not without a price, as these salts can greatly contribute to the degradation and decay of reinforced concrete transportation systems. The importance of chloride concentration as a durability-based material property has received greater attention only after the revelation that chloride-induced corrosion is the major problem for concrete durability. Therefore, there is a need to quantify the chloride concentration in concrete which is of paramount importance. The present research work was made an attempt to interpret the concrete chloride absorption in ordered to characterize the different concrete mixtures design for in case of pre-conditioned concrete cubes such as dry/fully/partially saturated condition and salt ponded with chloride solution for about 160 days. Thus the objectives of this present research are such as: First, this research will examine the influence of conditioning such as dry/fully/partially saturated condition on the results of chloride concentration performed on concrete cubes with different mixtures proportion in which slump, and w/c ratio value was varied with constant compressive strength as in the first case and compressive strength, and w/c ratio value varied with constant slump as in the second case. Seventy-two concrete cubes (100 mm³) with grades of concrete ranges from 25-40 N/mm² were prepared and evaluate the chloride absorption under different exposure condition. It's concluded from the results that, in dry/saturated conditioned concrete cubes, the chloride absorption value was increased in all designed mixtures type. Similarly, the average chloride concentration was decreased in solvent based and water based impregnation DCC/PSC/FSC cubes as when compared to control DCC/PSC/FSC cubes for constant higher compressive strength and varied slump value as well as varied compressive strength and constant slump value. Whereas the average chloride absorption was increased in solvent based and water based impregnation DCC/PSC/FSC cubes for lesser compressive strength and constant slump value as when compared to constant higher compressive strength and varied slump value and the chloride concentration was going on decreases with increased compressive strength and constant slump value.

Discovery, 2019, 55(285), 453-461

Influence of microorganisms on Aluu Crude Oil polluted soil environment in Niger Delta

Wecheonwu BC, Ukpaka PC, Puyate YT, Ehirim EO

Investigation was carried out to examine the effect of microorganisms on crude oil contamination of Aluu soil. The microorganisms studied were Total Heterotrophic Bacteria (THB) and Total Heterotrophic Fungi (THF). The result obtained revealed the significant effect of microorganisms on the remediation process on the crude oil contaminated soil on the parameters investigated. The statistical analyses used were analysis of variance (ANOVA) and regression analysis. The time has effect on total heterotrophic fungi $P < 0.05$ significant but has no effect on total heterotrophic bacteria $P < 0.05$ not significant. There were high positive correlations between variables and time.

Discovery, 2019, 55(285), 462-467**Ineffective development control and flood susceptibility in Lokoja, Nigeria**

Hafiz Shola Salami, Kolade Victor Otokiti

This paper examines the ineffectiveness of development control measures in addressing flood susceptibility in Lokoja, Nigeria. In carrying out this study, buildings susceptible to flooding were identified and factors influencing their vulnerability were determined. As part of this study, a total of 285 questionnaires were administered to residents of the study area. Random-stage sampling techniques were adopted. A quick bird eye image of 20 meter resolution was used to identify and map out the buildings in the area considered vulnerable to flooding using a 100 meter setback from the river banks, as prescribed by the state town planning board. The study reveals that 1,201 buildings were built in breach of building development standards of Lokoja, while building along river bank was found to be strong factors influencing susceptibility to flooding in the area. The study also revealed that 23.5% of buildings in Lokoja were developed on marginal land, amidst other factors. The study recommends that development control measures should be strictly enforced by the Kogi State Town Planning Development Board.

Discovery, 2019, 55(285), 468-476

Estimation of amount of biomass and carbon stock of cashew trees (*Anacardium occidentale*) in eastern corridor of Selous – Niassa transfrontier conservation area

Adili Y Zella, Mdee Norah V

Climate is changing and that the changes are largely due to increased levels of carbon emissions into the atmosphere caused by changes of land uses as a result of anthropogenic activities. Considering the impacts of climate change insisted the need for new conservation areas to fill connectivity gap between protected areas (PAs) or transfrontier conservation areas (TFCAs) through habitat corridors so as to enable species migration with their climatic niche. However depending on conservation criterion sometimes this corridor resides with dwellers, which depend on corridor resources for their livelihood. Selous – Niassa TFCA is one among the TFCAs connected with corridor which corridor dwellers depends it for their livelihood. The corridor is rich with cashew a tree (*Anacardium occidentale*) which is the principle cash crop in the area. Cashew trees like many other Trees outside Forests (TOF) have important economic, social and environmental values, at local, national and international scales. Environmental benefits of carbon sequestration of cashew trees is of important to corridor dwellers as it add value in poverty alleviation through carbon market schemes like REDD+. This study aims to estimate the amount of biomass and carbon stock of cashew trees in eastern Selous – Niassa TFCA and its contribution to income generation through carbon market. Archive data was analysed to get the intended output. Results indicates coconut trees to have biomass stocks of 2, 417, 853.06 tonnes equivalent to 1, 136, 201.22 tonnes of carbon stocks and producing accrued profit amounted US\$ 4, 544, 804.88 if adapted REDD+ programmes. The study concludes that cashew trees have both ecological and socio-economic benefits. It is suggested that, production, productivity and sustainable utilisation of cashew trees should be emphasized to safeguard reliance of corridor natural resources for livelihoods.

Discovery, 2019, 55(285), 477-483

BIOLOGY

Efficacy testing of eco-friendly and commercial antiviral products for the management of Zucchini Yellow Mosaic Virus

Bimala Pant, Sharada Joshi, Chetana Manandhar, Shrinkhala Manandhar, Suraj Baidya

An experiment was conducted to test the efficacy of eco-friendly and commercial antiviral products for the management of Zucchini yellow mosaic virus of zucchini squash at Plant Pathology Division Khumaltar, NARC. The experiment was conducted using a randomized complete block design with eight treatments namely Garlic clove extracts@ 50ml/lit, Victovirus@3ml/lit, Bougainvillea leaf extracts@200ml//lit, Viricon-H@3ml/lit, Cow–urine@200ml/lit, Anti-Vs@1gm/lit, Control and Yoghurt extracts@25ml/lit, each replicated for three times. Seedlings were transplanted with 100cm x 75cm spacing in 2.25m² plots, accommodating 4 plants in each plot. The plots were inoculated with ZYMV before the application of treatments. The first spray of treatments was done after 15-20 days after transplanting followed by second, third and fourth and fifth sprayings at 7 days intervals. In control plots, water sprayed with equal volume instead of plant extracts. Observations were recorded weekly on first appearance of disease, disease incidence, disease severity and yield of fruit. Symptoms were recorded at regular interval in all the treatments on the basis of visual observations. The scale used for scoring diseases was 1-5. During 2016, highest severity was found in Control plot (55%) and least in cow urine treated plot (27%). In 2017, highest severity was found in Control plot (65%) and least in yoghurt treated plot (30%). In both the year cow urine 200ml/litre was found most effective to minimize the zucchini yellow mosaic virus and increased the yield. The highest percent disease control was found in cow urine treated plot in both years.

Discovery, 2019, 55(285), 484-489

MEDICINE

Assessment of tuberculosis prevalence in Enugu State – A 5-year case study (2014 – 2018)

Wali YS, Effiong EC, Agujiobi IM

Tuberculosis (TB) remains a major global public health problem, as it is an infectious disease and a leading cause of death globally. The issue of missing TB cases has attracted so much attention globally; the same is the case in Enugu state as the primary drivers of TB transmission vary considerably from Local government to another. Community sensitization led to increasing in presumptive tested for TB (from 10230 in 2014 to 13260 in 2018). To ascertain Tuberculosis prevalence in Enugu state using 5-year data. This current retrospective study was conducted on patients' record who reported at the TB directly observed treatment short course (DOTS) clinic from 2014 to 2018 in Enugu state. The study population consists of all documented data found in the TB Presumptive and Treatment registers within the study duration. Data collected were subjected to statistical analysis, using One-way ANOVA and descriptive statistics. A total of 51,292 presumptive were tested for TB within the year under review, out of which 6371 were diagnosed bacteriologically to have TB, hence, a prevalence of 12%. Bacteriologically diagnosed cases of 98% (6250) were linked to treatment within the year 2014-2018. Statistical analysis revealed that generally across the period, male patients had a higher prevalence than the female patients. The treatment success rate (TSR) has gradually increased from 2014 to 2018 as TSR for 2014 was 79%, 2015 was 80%, 2016 was 81%, while 2017 and 2018 had 80% respectively. The number of presumptive cases increases yearly as a result of intervention going on in the state. A need for stakeholders to intensify the campaign in rural and urban areas to enhance community awareness will go a long way in reducing the burden of TB.

Discovery, 2019, 55(285), 490-495

Quantifying the impact of changing the initial data on biodiversity: Its extent and sustainable development scenario

Howard CC, Howard IC, Ekaka-a EN

The aim of this study is to quantify the impact of changing the initial data on biodiversity. We have used a numerical method to tackle this challenging scientific problem. We would expect this novel contribution to provide a further insight on some aspect of sustainable development with reference to the sustainability of the ecological resources and the recovering of the loss of ecological resources. The full results of the study are presented and discussed.

Discovery, 2019, 55(285), 496-503

Quantifying the impact of the co-existence steady-state solution on the type of stability using a numerical simulation approach

Howard CC, Howard IC, Ekaka-a EN

The interaction between species has been a long standing scientific research both for mathematical ecologists and environmental statisticians, biologists or scientists to mention a few. In the present study activity we have indentified the full potential of using a numerical simulation which is computationally efficient to differentiate types of stability due to a variation of a co- existence steady state solution. The novel results which we have achieved on the implementation of this method have not been seen elsewhere; they are presented and discussed in this paper.

Discovery, 2019, 55(285), 504-508

AGRICULTURE

Assessment the role of village extension worker in North Kordofan Rural Development Project (NKRDP), Sudan

Mekki Abdalla Adam, Sheikh Eldein Farah El Door, Mohammed AA Hamad

This study was conducted in North Kordofan State. The study covers both Um Ruwaba and Bara localities (NKRDP area). The main objective is to investigate the role of village extension worker (VEW) on increasing the awareness of the communities towards IPM techniques that used to improve production and minimize hazard in the environment in the project area. The study based on primary and secondary data. The primary date was collected from field through constructed questionnaires filled with participant farmers and VEWs by direct interviews. Stratified random sampling technique was used to select 142 participants as sample size. NKRDP was the main sources of the secondary data as well as the institutional sources (MOA and PPD), references and previous studies. The study used SPSS for descriptive statistics and Chi-Squire test was used to test the role of VEWs services. The results showed the allocation and presence of VEW at the project villages. The results have also highlighted the different extension methods used by VEW, such as home and field visits, meetings, FFS, leaflets, and Poster and extension campaign. The results have showed positive role of VEW as sources of pesticides instated of the village traders. Results also indicated the increasing in farmer's awareness towards the importance and use of seed dressing. The study had also shown an increase in the awareness of the farmers in the IPM of the watermelon bugs campaigns by 90% and the participation for the reason to control the pest by 76%. Results of Chi-squire test revealed significant differences between parameters measured. Finally, the study recommended the establishment of an extension system that can be developed for an effective integrated pest management.

Discovery, 2019, 55(285), 509-522