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BOOK OF ABSTRACT

Participant Universities: Baze University, Kwara State University, University of Abuja, University of Ibadan, University of Ilorin.

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ABSTRACTS

Situation for Execution of Renewable Energy Sources in Nigeria BY

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ABSTRACT

Renewable energy sources in Nigeria situation for execution as an alternative to fossil fuels like coal, oil and gases was carried out. This is with the view to assess the scenario for implementation of woody tree species as biomass resources in Nigeria for bioenergy potential benefits. Thirty line transects of 10m x 10m were laid out. Ten tree species were identified and their spatial distributions were studied for second generation biofuel production and implementation. The pollution produced burning fossil fuels and the incomplete character of energetic fossil resources imposes the need to replace them with other sources of energy (biodiesel and bioethanol which is still evolving). The paper presents a situation as a follow-up report for the implementing the renewable energy studies of some tree species (*Eucalyptus citriodora*, *Jatropha curcas* and *Jatropha gossypifolia*, *Delonix regia*, *Vitex doniana*, *Azadiracta indica*, *Vitellaria paradoxa*, *Terminalia ivorensis*, *Tectona grandis* and *Bridelia ferruginea*) for second generation biofuel production in Nigeria economy, taking account to the specific socio-economic aspects of Nigeria society and the present fossil fuel scarcity eating deep into the Nigeria economy. Since it still an evolving technology for bioenergy, the target of this situation is 2030 when Nigeria needs to increasingly substitute fossil fuel consumption while contributing to National Energy Security, Climate Change mitigation, apart from creating new employment opportunity in a sustainable way.

Keywords: Climate change, fossil fuel, biofuel, renewable energy and tree species

Preparation of Activated Carbon from the Pods of *Cassia fistula* BY

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Abstract

The pods of *Cassia fistula* were converted to activated carbon by carbonization and activation process. The activated carbon was characterized using Scanning Electron Microscopic (SEM), Brunauer Emmett Teller (BET) and Fourier Transform Infrared Spectroscopy (FTIR) analysis. The Scanning Electron Microscopic (SEM) images of the activated biochar showed morphology with numerous irregular cavities and sub-pores. The multiple and single surface area of Brunauer Emmett Teller (BET) analysis indicates that the adsorbent were 1499.63 m²/g and 1500 m²/g respectively, while mean porous diameter of the activated carbon was 2.180 nm, characterizing a mesoporous material. The results obtained from this research indicate that the pods of *Cassia fistula* represent a promising raw material for activated carbon production, given their availability and characteristics of the adsorbent produced. The use of seed pods for activated carbon production can reduce the operational costs of adsorption process, besides providing the use of a residue for a more noble purpose.

Key words: *Cassia fistula*, FTIR, activated carbons, Scanning Electron Microscopic, Brunauer Emmett Teller

Production of Activated Carbon and Syrup from Pit and Pulp of Date Fruit (*Pheonix dactylifera*)
BY

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ABSTRACT

Date seed was used in the preparation of activated carbon using Orthophosphoric acid (H₃PO₄) as activating agent. The physicochemical properties of the activated carbon were determined, the result shows pH of 6.5, moisture content of 15.69%, and % yield of 66.67% and a bulk density of 0.14g /cm³. Characterization test was carried out and the resultant porous carbon has a BET surface area of 1044m²/g, a pore size of 6.523nm, and pore volume of 0.5327cm³/g. The textural characterization were assessed by SEM and FT-IR. The date syrup was made from mesocarp of the date fruit and was evaluated for their physicochemical characteristics. The results shows moisture content, protein, fat, ash and carbohydrate obtained as 10.12%, 2.6%, 1%, 2.14% and 84.11% respectively. The total sugar, glucose and soluble solids was also observed: 21.36%, 14.28% and 62% respectively. The result indicate that date syrup can be used as an alternative for sugar syrup while the various test carried out on the date seed activated carbon shows that it can serve as a good raw material for the production of activated carbon.

Keywords: Activated carbon, surface area, pore structure, pore size, BET, FT-IR, SEM, date syrup.

Isolation And Screening of Fungi For *inulinase* Production
BY

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ABSTRACT

Inulinases are a class of hydrolytic enzymes obtain from plants, animals and microorganisms and have found applications in food, pharmaceutical and bio-processing industries. In this study, fungi were isolated from rhizosphere of two (2) vegetative soils within University of Ilorin Campus, Ilorin Nigeria and screened for inulinase potential. Fungi were isolated by pour plate technique using inulin-enriched medium. Primary screening for presence of inulinase was done by rapid plate assay. Three (3) fungi were isolated and identified by macroscopic and microscopic characteristics as *Aspergillus terreus*, *Aspergillus flavus* and *Rhizopus oryzae*. All three (3) fungi showed hydrolysis of inulin indicating inulinase activity with their enzymatic index ranging between 3mm-22mm. The study indicates that the two vegetative soils studied within university of Ilorin campus possess fungi with the potential to produce inulinase.

Keywords: Inulinase, fungi, vegetative soils, enzymatic activities

Pollen Morphology of Genus *Vitex* and Its Taxonomic Significance in Nigeria
BY

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ABSTRACT

The aim of the study is to provide an account on the pollen morphology of the genus *Vitex* in Nigeria. Pollen grains of 10 species were examined by Light microscope in order to serve as basis for future studies and also to help the taxonomic characterization of the species. The morphology characters examined were size, shape, tectum surface ornamentation, number and type of colpi. All

pollen grains studied are small and 3-colpate except *Vitex simplicifolia* from which 4-apertures were observed. All grains are reticulate however, *Vitex simplicifolia*, *Vitex grandifolia*, *Vitex rivularis*, *Vitex bogalensis* and *Vitex feruginea* are finely reticulate. *Vitex thrysiflora* and *Vitex oxycuspsis* are also foveolate hence this might make them to be more closely related to one another while *Vitex doniana* has some striations with largest pollen and this distinguished it from other studied species. The quantitative characters revealed that the average pollen were generally small, the largest average size was found in *Vitex doniana* ($P = 26.54 \pm 2.42$ and $E = 24.25 \pm 3.2$) while the smallest pollen size was shown in *Vitex feruginea* ($p = 1.46 \pm 1.45$ and $E = 1.46 \pm 1.45$). Pollen shape is either Prolate spheroidal or Subprolate. The number and the type of colpi were generally 3-colpate in all studied species except *Vitex simplicifolia* that had additional 4 colpate. *Vitex bogalensis* is new to the flora of Nigeria, The morphological data obtained would be useful for the delimitation among the *Vitex* species and for elucidating the relationships among them.

Keywords: Pollen, morphology, *Vitex* and Taxonomy

Assessment of the Population Dynamics of Flea Beetle (*Podagrica sodjeti*) on growth Performance of Okra (*Abelmoschus esculentus* L.) in the University of Abuja Teaching and Research Farm
BY

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ABSTRACT

A research was carried out in the University of Abuja Teaching and Research Farm to evaluate the seasonality of population dynamics of flea beetle (*Podagrica sodjeti*) and its effect on growth performance of okra (*Abelmoschus esculentus* L.). The parameters measured were; plant height, number of leaves, leaf area and number of insects on plants. The result showed that flea beetle is a serious insect pest performance of four Okra. There was no significant difference at $P \leq 0.05$ in plant height and number of leaves among the okra varieties at 2WAP, 4WAP, 6WAP and 8WAP. However, there was a reduction in the number of leaves on okra at 10WAP and 12WAP respectively. There was no significant difference in leaf area of okra varieties at $P \leq 0.05$ at 2WAP, 4WAP, 6WAP and 8WAP but the leaf area significantly differed in 10WAP and 12WAP. There was no significant difference in the number of insects on okra at 2WAP, 4WAP and 10WAP but significant differences were established at 6WAP, 8WAP and 12WAP respectively $P \leq 0.05$. Other factors associated with the environment and growing conditions may also have potential impact on the effect of insect pests on okra.

Keywords: Flea beetle, Okra, growth performance, population Dynamics

Effect of Weeding Regimes on Insect Infestation, Growth and Yield of Three Cowpea Varieties
BY

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ABSTRACT

An experiment was conducted at the Teaching and Research Farm of University of Abuja, Abuja to study the effect of weeding regimes on insect infestation, growth and yield of three cowpea varieties during 2021 cropping season. The treatment consisted of four weeding regimes which were weedy check; one weeding at 3WAS; two weeding at 3 and 6WAS; three weeding at 3, 6 and 9 WAS; and three cowpea varieties (SAMPEA 14, SAMPEA 9, SAMPEA15). Weeding regime was factorially combined with three cowpea varieties and laid out in Randomized Complete Block Design with three replications. Data were collected on insect infestation, growth and yield characters of cowpea as well as on weed characters such as weed density and weed cover score. Data generated were subjected to Analysis of Variance using SPSS. The results showed that three hoe weeding done at 3, 6 and 9 weeks

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after sowing (WAS) had significantly lower insect pest population compared to the un-weeded plots while weeding once at 3 WAS had a similar insect population with the other weeding regime plots. The results also showed that weeding three times at 3, 6 and 9 weeks after sowing (WAS) produced the highest number of branches, plant height, leaf area and number of leaves while weedy check and weeding once at two weeks after sowing recorded high weed density and cover score. Further research should be conducted on different varieties at different locations.

Keywords: weeding regime, cowpea, insect infestation, plant growth, yield

Effects of soil pollution on the germination, growth, fruiting and leaf anatomy of *Abelmoschus caillei* (A Chev.) Stevels malvaceae

BY

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ABSTRACT

Spent engine oil is one of the most common pollutants in the world. Disposal of this oil has been persistently problematic and adversely affects plant growth. The effects of different levels of spent engine oil application on germination, survival, growth and leaf anatomy of *Abelmoschus caillei* (A Chev.) Stevels (West African okra) was investigated. Completely randomized design was used with five replicates for five treatment levels of spent engine oil at 0 ml (control), 50 ml, 100 ml, 150 ml and 200 ml applied to 5 kg of soil in polythene pots on which the seeds were sown. Data on germination, seedling survival, growth and fruiting were collected; and leaf epidermal features were determined using standard methods. All data were subjected to the Statistical Package for Social Sciences (SPSS) analyses version 21.0. Spent engine oil at 200 ml per pot significantly ($P < 0.05$) delayed and reduced seed germination from 4 days to 2 weeks for all plants and by 85.71% compared to the control. Plant height was reduced by 65.74%; number of leaves by 84.74%; leaf area by 84.41%. Number of stomata was increased on the abaxial surface by 27.99% and on the adaxial surface by 35.02%, respectively; stomata area was reduced on the abaxial surface by 97.35 and on the adaxial surface by 95.59 ($p < 0.05$) without fruiting. The study has shown that plant growth, yield and anatomy of leaf were severely affected by spent oil contamination at higher concentration. Contamination of soil with spent engine oil should therefore be properly checked in order to ensure sustainable crop plant productivity.

Keywords: *Abelmoschus caillei*, physiology, anatomy, spent engine oil

Effects of Deforestation on the Nest Morphometric of *Melliponula ferruginae* at University of Ilorin Agro-ecology

BY

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Abstract

Nest Morphometric of eight *Melliponula ferruginae* nests were studied to assess the effects of deforestation on bee biology of the stingless bees in the University of Ilorin Agro-ecology. The knowledge of the bee biology is a baseline guide to the conservation of the stingless bees. Three nests

each from Oyun and Bolounduro, Slightly disturbed agro-ecologies and two from Jalala, a highly disturbed agro-ecology were studied to assess nest morphometric of *Melliponula ferruginae*. Nest cavity's heights and diameters, batumen cover, brood cell thickness, brood cell diameters and heights, pillar connecting brood comb heights and diameters, pollen and honey pots' diameters and heights were measured using 30cm and 15cm rulers, tiny ropes and a pair of dividers. Pollen and honey weights were also assessed. The data collected were subjected to one-way analysis of variance (ANOVA). There were large nest cavities, more involucre sheets, more batumen cover, bigger pollen and honey pots at Oyun and Bolohunduro, slightly disturbed agro-ecologies than Jalala, a highly disturbed agro-ecology. Both pollen and honey pots' heights and diameters at Oyun and Bolounduro differed significantly from those found at Jalala. The results showed that those nests found at slightly disturbed agro-ecologies have access to bigger cavities and more plant resources like resin, pollen, nectar which play vital roles in their survival, compared to the nests found at highly disturbed agro-ecology which have small cavities and limited resources.

Keywords: *Melliponula ferruginae*, agro-ecology, plant resources, deforestation

Bacteriological Assessment of Ready to Eat Fruits Sample in Selected Markets within Ibadan Metropolis
BY

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ABSTRACT

Background: The direct consumption of ready-to-eat fruits and nuts has been identified as a potential risk-factor for food-related illnesses. In this study, forty-five (45) samples of ready-to-eat fruits comprising 15 each of watermelon, pineapple and mango, collected aseptically from three vending markets (Bodija, Agbowo and Ojoo) between April through June, were analyzed microbiologically. The highest mean total aerobic plate (3.4×10^5 cfu/g) and coliform (5.8×10^3 cfu/g) counts were obtained from watermelon and mango respectively in Bodija market. Conversely, the lowest mean total aerobic plate (1.4×10^5 cfu/g) and coliform (2.0×10^3 cfu/g) counts were obtained from pineapple and watermelon respectively in Agbowo market. A total of 74 bacteria comprising seven genera namely; *Staphylococcus aureus* (28%), *Escherichia coli* (20%), *Klebsiella pneumoniae* (14%), *Salmonella enterica* (14%), *Bacillus* sp. (11%), *Proteus mirabilis* (8%) and *Shigella sonnei* (5%) were isolated from the fruits. The level of pathogenicity of the isolates was ascertained using DNase, hemolysis, gelatinase, protease, presence of flagella and slime producing capability virulent tests. The result revealed *Staphylococcus aureus*, *Bacillus* spp and *Escherichia coli* as probable pathogenic organisms. The gram negative bacteria isolates showed highest resistance to Ampicillin (80%), Nitrofurantoin (68%), and Augmentin (66%) while most of them were sensitive to Ceftazidime and Ciprofloxacin. The gram positive bacteria isolates were susceptible to Cloxacillin and Cephalexin and showed high resistance to Augmentin (65%) and Erythromycin (62%). The study concluded that street vended fruits might be potential reservoir for the spread of multidrug resistant bacterial strains and recommended adequate sensitization of fruit vendors on the need to maintain high standard of personal and environmental hygiene. In addition, proper washing of fruits before consumption should be encouraged among consumers.

Keywords: Ready to eat fruits, Bacterial contamination, Pathogenicity, Antibiotics susceptibility.

Phytochemical Screening, Antioxidant Activities and Liquid Chromatographic Analysis of the Fruits Pulp and Leaves Extracts of *Syzygium cumini* L. (Black Plum)

BY

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ABSTRACT

Crude extracts of fruits pulp and leaves of *Syzygium cumini* were subjected to phytochemical, antioxidant activities and liquid chromatographic examination. The tests revealed the presence of alkaloids, cardiac glycosides, flavonoids, phenols, saponins, tannins, and terpenoids. A macromolecule (carbohydrates) and steroids were found in both the fruit pulp and leaves extract. Liquid chromatographic analysis of the leaves and fruits revealed the leaves were more active than the fruit pulp extract. The fruits pulp chromatogram had one (1) major peak (4.8 minutes), three (3) significant peaks (6.7, 7.2, 13.1 minutes), and one (1) trace (6.3 minutes). Seventeen (17) peaks were observed in the leaves extract, with the major peak appearing at 9.4 minutes. Two (2) significant peaks (3.6 and 6.3) were observed with fourteen (14) traces appearing at the retention times 0.7, 3.1, 3.9, 4.3, 5.3, 6.1, 6.5, 7.1, 7.5, 8.0, 11.4, 12.6, 17.1, and 18.1 minutes respectively. Both the fruits pulp and leaves contained a wide variety of antioxidant related natural products, very rich in different classes of phytochemicals, widely responsible for the plant's bioactivities. Hence, the worldwide use of the plant in its ethno medicinal applications in the treatment of various infections and diseases.

Keywords: Phytochemicals, Retention time, DPPH, liquid chromatography, Chromatogram, Secondary metabolites.

Productive Performance of Three Different Color Lines of Nigerian Indigenous Turkey

BY

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ABSTRACT

A total of sixty (60) birds were used to evaluate the productive performance of three different color lines of Nigerian indigenous turkey raised under the same condition. The experiment was conducted at University of Abuja Teaching and Research Farm. The birds (60) comprising of twenty (20) white turkeys, twenty (20) bronze turkey and twenty (20) black turkeys were used for the experiment and were divided into 3 treatments 5 replicate in a completely randomized design (CRD). The experiment lasted for 8 weeks, data were collected on feed intake, body weight and mortality. Data were analyzed for Analysis of Variance (ANOVA) using SPSS and Duncan Multiple Range Test was used to detect differences among means. No significant difference ($p > 0.05$) in live weight for three color types were found. At the end of 8 weeks rearing, bronze type turkeys attained highest live body weight (604.4 g/bird) while White type turkeys attained lowest (598.73g/bird). The Black type turkeys however, attained 553.06g/bird body weight. No significant difference ($p > 0.05$) in FCR among the three color types were found. Taken together, the growth performance of Bronze type turkey was superior to other color types used in this experiment. However, it can be concluded that turkey farming will be viable in Nigeria with available local varieties under intensive system.

Keywords: Colour lines, Growth, Feed conversion ratio, Poults

***Daniellia oliveri* as a quintessential diabetic remedy: Evidence from *in silico* evaluation**
BY

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Abstract:

Daniellia oliveri is a tree species belonging to the subfamily Caesalpinioideae (Fabaceae), whose young leaves are used locally to manage type 2 diabetes in Nigeria. Diabetes mellitus is increasing in prevalence, and well-known traditional medications are associated with harmful effects. Hence, this study aimed to revalidate the use of young leaves of *D. oliveri* and identified probable compounds responsible for the acclaimed activity using *in silico* model. To identify to a certain extent the compounds present in the leaves of *D. oliveri*, the ethyl acetate fraction was subjected to column chromatography for further scrutiny. The best chromatographic fraction was analyzed using LC-MS to identify the prominent compounds present. The compounds identified were subjected to ADMET prediction using online platforms to confirm how druggable the compounds were. In addition, the compounds were screened for activity against type 2 diabetes using computer-aided drug discovery (Molecular docking). The compounds with prominent peaks were Gallic acid, 2,6-dihydroxybenzoic acid, salicylic acid, caffeic acid, phenylacetaldehyde, 2,5-dimethylphenol, 3-(4-Hydroxyphenyl) propionic acid, and 16-hydroxyhexadecanoic acid. Most of the identified compounds are phenolics and pose little toxic effect *in silico*. The molecular docking results revealed the potentials of the identified compounds in inhibiting the therapeutic targets viz; 11 β -hydroxysteroid dehydrogenase type 1 (11 β -HSD1), Human Salivary alpha-amylase (HSA), Glycogen Phosphorylase (GP), Human Protein Tyrosine Phosphatase 1B (PTP1B), Glutamine Fructose-6-phosphate amidotransferase (GFAT), Human sirtuin 6 (SIRT6), and Dipeptidyl peptidase IV (DPP-IV), responsible for the development of type 2 diabetes. This study has successfully revalidated and provided scientific insight into the usage of *D. oliveri* in managing type 2 diabetes by Nigerians. However, the limitation of this study remains the purification of the lead compounds that can serve as lead for type 2 diabetes treatment in conventional medicinal practices.

Keywords: Diabetes mellitus; *D. oliveri*, Molecular Docking; Gallic Acid.

Preparation of Activated Carbon and Syrup from Pit and Mesocarp of Date Fruit (*Phoenix dactylifera*)

BY

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ABSTRACT

Date palm seed was used to prepare activated carbon using Orthophosphoric acid (H₃PO₄) as the activating agent. The DSAC was activated at a temperature of 400⁰C, an impregnation ratio of 4:1 and activation time of 120 minutes. Physicochemical properties were carried out, the result shows a pH of 6.5, moisture content of 15.69%, %yield of 66.67% and a bulk density of 0.14g/cm³ The textural characterization were assessed based on nitrogen adsorption isotherm (BET), SEM and FT-IR characterization was also carried out. The resultant porous carbon has a BET surface area of 1044.113m²/g, a pore size of 6.523nm, and pore diameter of 2.118nm characterizing a mesoporous material. The result obtained for the DSAC shows that date seed can serve as raw material for the production of activated carbon, given their characteristics and wide availability, the use of date seed for activated carbon production can also reduce operational cost, which makes it a good alternative for Commercial Activated Carbon (CAC). The Date mesocarp was used for the production of date syrup.

The result of the proximate analysis of the produced date syrup shows moisture content of 10.12%, 2.6% protein, 1% fat, 2.14% ash and 84.11% of carbohydrate was obtained respectively. The total sugar, glucose and soluble solids was also tested and the following results were obtained: 21.36%, 14.28% and 62% respectively. The presence of simple sugar in the date syrup makes date syrup a good alternative for sugar syrup.

Keywords: Activated carbon, surface area, pore structure, pore size date seed, BET, FT-IR, SEM, date syrup, proximate analysis.

Fermentation of *Aspergillus niger* and *Fusarium oxysporum* On Low-Cost Substrate For The Production of Inulinase
BY

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Inulinases are hydrolytic enzymes used as catalyst in the production of High fructose syrups (HFS) which serves as sweetener with little calories and Fructo oligosaccharides (FOs) which serve as prebiotics in the digestive tracts and also used as biofunctional food supplements. Inulinases are attracting a lot of interest due to their capacity for the production of biofunctional neuraceuticals with positive health effects. This study isolated fungi from the rhizosphere of fruit trees and investigated their inulinase potential. Isolation of fungi was done by pour plate technique and screening of isolates for inulinase activity was carried out by a rapid plate assay. Fermentation was employed in the production of inulinase and enzyme activity was determined by using a qualitative assay (DNS method). Three fungal isolates *Aspergillus niger*, *Fusarium oxysporum* & *Aspergillus tamarii* were obtained and identified as effective inulinase producers based on colonial, morphological and microscopic examination. All three fungi isolates demonstrated the presence of inulinase activity by the hydrolysis of inulin, showing clear zones. Spectrophotometric analysis revealed the presence of fructose as end product of fermentation of inulin enriched substrate, indicating inulinase activity. The highest enzyme activity was obtained from *Aspergillus niger*, indicating that *Aspergillus niger* is the most effective inulinase producer among the 3 fungi isolated. The study indicated that rhizosphere of fruit trees possess fungi with potential for inulinase production.

The Enzymatic Preservation of Aso-Oke Fabrics for Theatre and Film Productions
BY

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Abstract

Aso-oke fabric is a traditionally woven fabric found mostly in south-western part of Nigeria. It is a fabric with unique properties such as good thermal regulation, high moisture absorption, low crispy tendency, low flammability and ability to boost beauty and culture. To this extent, its demand among costumiers is inexhaustible because it is used in Theatre and Film for depicting cultural/ epic productions. However, as a result of its heavy welt, it is not a fabric to be washed always. But for its optimal use, there is the need to maintain the depth of its colour and preserve micro bacteria from it, so as to avoid fabric contamination and health hazards of actors. The Present study was undertaken to determine the effect of protease enzyme in treating the fabric for physical and colour fastness protection. The findings reveal improvement in all physical and colour fastness after it is subjected to protease treatment. The scale of the fabric equally revealed smoother and cleaner surface structure devoid of dirt and microbial impurities which can cause health hazard to actors, this makes it effective for preservation of Aso-oke for Theatre and Film Productions.

Keywords: Enzymatic, Preservation, Aso-oke, Fabric, Theatre, Film

Quality Enrichment and Preservation of Kheer by Fortification with Spices
BY

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Abstract

Kheer is a cereal based dairy delicacy popular in India. In this study, kheer was made plain (T1) and also made using 5% curry (T2), 5% thyme (T3) and 5% almonds (T4). The various kheer samples were analyzed for proximate composition and sensory quality using ANOVA of a Complete Randomized Design. The sensory evaluation was determined by 30 trained panelist using a nine point hedonic scale. The parameters for color, taste, texture, flavor, overall acceptability ranged from 7.50 - 8.40, 6.86 - 8.20, 6.80 - 7.80, 7.00 - 7.93, 4.90 - 7.93 respectively. The result revealed that texture, flavor, color were not significantly ($P>0.05$) among the treatments except for taste and acceptability ($P<0.05$). The percentage of dry matter, moisture content, crude protein, crude fat, total ash and carbohydrates content of each treatment from T1 - T4 were found to be 25.31- 45.47, 54.74 - 74.69, 5.80 - 6.69, 1.19 - 1.36, 2.29 - 2.66 and 15.86 - 32.52 respectively. The energy content of each treatment from T1 – T4 samples were found to be 166.12, 139.12, 15.86 and 98.16 Kcal/100g respectively. The result revealed that for the various treatments there was no significant difference ($P>0.05$) in sensory evaluation except for taste and overall acceptability. The study recommended the addition of 5% almonds (T4) as a spice to fortify kheer due to its high overall acceptability. The use of Almond in kheer revealed it is highly beneficial for consumption and the nutritional factor enhance its value.

Keywords: Kheer quality, chemical analysis, sensory evaluation.

Lactobacillus Fermentation of Dry grass for the Feeding of the West African dwarf Goat
BY

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Abstract

This study was conducted to evaluate the nutritional values of Bacteria, *Lactobacillus fermentum* and *Lactobacillus plantarum*, treated *Panicum maximum* grass meal, on the performance characteristics of West African Dwarf Goat. A total of fifteen West African Dwarf Goats were used for the experiment in a completely randomized design model for a period of eight weeks. The weight of these animals ranged between 5.7kg and 10.1k. The experimental treatments consist of Treatment A (control) with no inclusion level. Treatment B (23% of *Panicum maximum* fermented with *Lactobacillus fermentum*) and Treatment C (23% of *Panicum maximum* fermented with *Lactobacillus plantarum*) (grass meal). Other ingredients were at fixed proportions. It was observed that animals fed on Treatment C (23% *Lactobacillus planetarium*) had higher mean values of Feed Intake and Weight gain compared to other treatments. The result also showed that the digestibility of Dry matter, Crude protein, Crude fat, Crude fibre, Total Ash and NFE of WAD goats fed control had higher numerical mean values of Crude Fiber and Ether extracts compared to other treatments ($p>0.05$). It can be concluded that inclusion of *Lactobacillus fermentum* and *Lactobacillus planetarium* grass meal in the diet of West African Dwarf goat showed that probiotics can be deploy in meeting the nutrient requirement of goats without adverse effect.

Keywords: Lactobacillus, West African Dwarf Goat, Probiotics, *Panicum maximum*

Evaluation of Impact of Selected Management Practices for Insect Pest Infesting Three Varieties of Groundnut (*Arachis hypogaea* L.) in the University of Abuja Teaching and Research Farm
BY

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Abstract

This study evaluates the impact of selected management practices for insect pest infesting three varieties of Groundnut (*Arachis hypogaea* L.) in the University of Abuja Teaching and Research farm. Three spacing parameters (30cm, 50cm and 75cm) were used on three varieties of Groundnut (SAMNUT 20, SAMNUT 22, SAMNUT 24) alongside trap cropping and routine weeding. A Randomized Complete Block Design (RCBD) with 3 replicates and 9 blocks were used for this experiment. The experimental Block Size was 3.75x 9.25 m². The total plot area was 42.5 m² with a spacing of 0.75 m² between the replicates and 1 m walking alley between the blocks. Data collected were analysed using Generalized Linear Model with multivariate assumptions using SPSS Version 16. Treatment and varietal mean were separated with Student Newman Keuls Test (SNK) and Duncan at P ≤ 0.05. The weeding regime had great effect on the plant growth parameters and yield of SAMNUT 20, SAMNUT 22, and SAMNUT 24. No incidence was observed. The 50cm spacing had more effect on crop growth, as compared to 30cm spacing and 75cm spacing. In conclusion from the study it was noted that 50cm spacing had more effect on crop growth, as compared to 30cm spacing and 75cm spacing.

Keywords: Evaluation, impact, spacing, pests, insect, interaction effect.

Morphometric Taxonomy of *Tribolium Castaneum* L. On Wheat Flours in Federal Capital Territory (FCT), Abuja
BY

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Abstract

This study entails the morphometric taxonomy of *Tribolium castaneum* species in the Federal Capital Territory (FCT) Abuja Nigeria. The biological material used consists of *T. castaneum* males and females that emerged after mass rearing on wheat flours. Morphometric features of *T. castaneum* males and females were measured with the aid of a calibrated handheld digitalized MiScope microscope with magnification range of 40-140x in millimeters. Data was analysed with two step cluster analysis. A total of three morphoclusters of *T. castaneum* was observed, in Abaji (ABA), Gwagwalada (GWA), Kwali (KWA) Area Councils. The female caste had larger size than the male sex in most of the morphometric features. Findings from this study show the reliability of use of morphometric features in the classification of *T. castaneum* in FCT to morphoclusters. This method can be adopted by farmers to properly identify *T. castaneum* to subspecies for proper management and control.

Keywords: *Tribolium castaneum*, Morphometric features, Morphoclusters, Area Councils