Research Information for National Development: Annotated Bibliography of

Ph.D and Masters Theses Produced At
Federal University of Technology Minna

Bitagi's Copy

Volume One: 1995 – 2003

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Dedication

To all ex-students whose Theses are listed

Acknowledgement

For this work to be successfully accomplished is an indication that efforts have been put together by several people to realize the dream. We are most sincerely grateful to the management of the Federal University of Technology (F.U.T) Minna under the leadership of the Vice Chancellor, Prof. M. S. Audu for creating an enabling environment to undertake this work. With this kind of support, we are hopeful that in the few years to come, F.U.T.Minna will lead, for others to follow.

The numerous ex-students whose Theses have been listed in this book deserve our commendation in achieving the objectives for which they are admitted in to this great institution. To each and every one, we say well done and wish you the best in your individual and or collective pursuits. The University Librarian, Mallam Muhammad Ibn Muhammad who does not only provide the leadership for the custody of the post research projects but also gave numerous professional advice that saw the emergence of this work as a complete volume. To him, we say thanks.

The Dean, Postgraduate School, Prof. S .l. Lamai did not only support the initiation but also provided the foreword that this work deserve. His announcement to the Postgraduate School Board Member of the outcome of this work indeed shows how happy he is about the exercise. Your moral support and encouragement are highly appreciated.

Colleagues in the professional circles such as Mrs. Salimatu k. Garba, Mr. J .J. kolo and several others too numerous to mention have also contributed in one way or the other towards the successful completion of this book. To all of you we say a very big thanks to you.

Finally, our sincere appreciation goes to Mrs. Patricia and Mall. Musa Baba Adamu who took great pain, patience and times to process the manuscripts for the computer printout despite their tight work schedules.

Foreword

For the first time nearly two decades when Postgraduate School commenced training and research, Federal University of Technology is presenting to the public a comprehensive annotated Bibliography and Abstracts of all research Theses produced in the various fields of Science and Technology at the Postgraduate level.

This document couldn't have come at a better time than now when research activities at the Postgraduate School have witnessed tremendous growth in the quantity and quality. The large turnout of research findings in different fields is not only a significant contribution to the knowledge but a response to the needs of society that needed acknowledgement.

In commending this work to the academia and the general public, I would like to acknowledge the contributions of the Deans and Deputy Deans who were here before me and through whose superintending efforts these Theses and Abstracts were produced.

Finally, the Postgraduate School wants to thank and congratulate the University Librarian and his staff for pioneering this work and all those Scholars whose works are reflected in this maiden edition.
It is my sincere hope that this edition will fill in the gap and satisfy the yearnings of all.

Prof. S.L. Lamai, FFS.
Dean, Postgraduate School

Compilers Notes

The compilers observed that it is not easy to summarize even the abstracts of these because a number of factors. Firstly, it was assumed that several students did not comprehend research methods adequately or they forgot to use the procedures they were taught. These naughty issues were witnessed in Thesis that runs through more than the required number of chapters. A comprehensive research, in normal circumstances does not exceed five chapters. Secondly, abstracts, as written by several students fail to summarize the content of their study, chapter by chapter, in others yet, findings are not identified while others fail to provide adequate summary, conclusion and recommendation. Data for this bibliography was gathered from only the theses that were presented to the university library during the period review.

Subsequent volumes of this publication will include all other these covered by this period presented to the library later but not covered by the present listing. For ease of identification of items listed, the bibliography and all other entrees such as the schools, Department and another index are arranged alphabetically. In view of the importance of this publication to the university, Niger State and indeed the entire nation the compilers are of the view that all heads of Department should see it as a major responsibility depositing these emanating from their Departments so as to get the entire world informed about researches carried out in the university.

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Introduction

Universities worldwide are known to be the peak of academic activities in various aspects of human endeavor. In that respect, they are charged with the responsibility of not only producing the high caliber manpower/intellectuals required to fathom ways of identifying multifaceted problems facing the country through teaching and research, but also serve as guides in interpreting and implementing the findings to meet the socio-economic, cultural, scientific, technological and other developmental needs of the country. It is in line with the above view that the National Policy on Education (NPE) (2004) specified that the goals of tertiary institutions are;

To contribute to national development through high level relevant manpower training; develop the intellectual capability of individuals to understand and appreciate their local and external environments; acquire both physical and intellectual skills which will enable individuals to be self-reliant and useful members of the society; promote and encourage scholarship and community service; forge and cement national unity and lastly to promote national and international understanding and interaction.

Among the methods which the N.P.E itemized for the attainment of these goals are though teaching, research and development, virile staff development programmes and Generation and Dissemination of Information (emphasis ours)etc.

From the above analysis, it is with these goals in mind that the Federal University of Technology, Minna (FUTM)and indeed other Federal Universities of Technology (F.U.T.) were established by the Federal Government vide Decree No.13 of

11th July 1986. The Federal Government (1986) in addition to the above generalized goals, specified specific objectives to be achieved by these universities. These objectives include, to develop and offer academic and professional programmes leading to the award of .... Postgraduate research and higher degrees which emphasize planning, adaptive, technical, maintenance, developmental and productive skills in the engineering, scientific, agriculture, medical and allied professional disciplines......

In addition to the above, the Universities of Technology (UT), according to the Federal Government (1986), are to act as agents and catalysts, through postgraduate training, research and innovation of the effective and economic utilization, exploitation and conservation of the country's natural economic and human resources.

The Federal University of Technology, Minna in cognizance of the above numerous tasks and importance attached to the roles to be carried out, established its own Postgraduate School (PGS) to run the expected programmes in 1989/1990 session (FUTM, 2007) in order to achieve the descried objectives. The programmmes which according to the institution took off with only 22 Ph.D degree and 42 masters degree candidates in 1991/92 session is today admitting hundreds of students for the same purpose. In the same vein, the FUTM have five hundred and ninety (590) qualified academic teaching staff to meet up with the expectations and challenges of the institution.

The objectives of establishing the Postgraduate School according to the hand book is to among others focus attention on individual and group research in areas that will complement state and national efforts for socio-economic development. It is therefore in view of the above objective that the institution in

addition to students' course work requirement to be confirmed for their various degrees has made it mandatory for each student to produce a thesis, in a given area of specialization and must prove the originality of such research work.

From the above discussion, the Thesis produced by the Postgraduate students are therefore original. This therefore indicates that if the findings in such research projects are implemented accordingly, the university will not only have achieved the objectives for which it was reestablished, but also ensure that Niger State in particular and the country at large would have developed tremendously in all sectors of economy.

However, the research findings by the students of the postgraduate school might not have reached a wider audience other than the university community where the research projects are submitted. It is based on this assumption that an attempted is made to compile this annotated bibliography with the view that research findings on various aspects will be disseminated for the benefit of the larger audience. In addition to that, this research material will serve as a guide to both lectures and postgraduate students particularly on methods and research area previously covered by postgraduate students.

PHD THESES SCHOOL OF AGRICULTURE AND AGRICULTURAL TECHNOLOGY

Department of Animal Production

Abdulmojeed T.I. (2002).

Growth and Reproductive Performance of Rabbits (Oryctolaus Cunniculus) Fed Maize (Zeamays) and Fermented Cassava (Manihot Ulissima) Peel Meal

The study was carried out of examine the effects of substituting different levels of maize with fermented carcus peel meal as an energy source on the growth, cassava characteristics and reproductive performance of rabbits. The study is aimed at examining the cost and nutritional value of replacing the more expensive maize with fermented cassava peel meal in the diets of rabbits. Twenty-five weaner rabbits of mixed bread (both sexes) were randomly allotted into five equal treatment groups. Each group was fed with different levels of maize and fermented cassava peel meal at different point and times. The summary of the different result of the experiments is as follows; the growth rate and of fermented CPM of 50% and feed intake were enhanced with the incorporation above to replace maize. Apparent digestibility of nutrients was not affected by the varying levels of fermented CPM incorporated into the diets of rabbit, the replacement of maize with different level of fermented CPM were found to be cost – effective, carcuss yield and characteristics responded similarity to the different level of fermented CPM inclusion in the diets of rabbit examined, and the average daily weight gain of does and kittens and average daily weight gain of kittens, at weaning were highest when 100% maize was replaced with fermented CPM. Therefore, fermented CPM can be used to replace maize

an as energy source in diets of weaner and breeding does, was the conclusion drawn from the study.

Alemede, I.C. (2002).

Productivity of Intensively Managed Savannah Brown Goats Fed Varying Levels of Protein in the Southern Guinea Savannah Ecological Zone Of Nigeria

A total of five experiments were conducted to study the effects of various feeding strategies and environmental conditions on the performance of intensively managed Savanna Brown Goats. Four groups of animals were used during each phase of the experiment and they were all maintained on a common diet of maize bran. Also, seven and a half liters of water was provided to each group of animals on daily basis while salt licks were equally made available to them. Then, daily temperature, feed and forage intake, water intake, milk yield and quality were monitored. The study discovered that season had effect on water intake, milk yield and its quality. However, season did not have any effect on the pattern of feed consumption. It was therefore, concluded that protein inclusion in the diet of savanna brown does may not be beneficial for growth and kidding but milk yield and quality could be improved by fortifying the diet of savanna brown does with protein. The study recommended further studies of the effects of different nutrients on the performance of intensively managed savanna brown does with the hope that better results could be obtained to alleviate the problem of protein shortage in Nigeria.

Performance of Local (yankasa) Rams on a Year-Round Diet of Groundnut Haulma, Gmelina Leaves and Concentrates.

This study was designed to assess the performance of Yankasa rams on a year round feed of Groundnut Haulms (GNH), Gmelina Leaves (GL), Cotton Seed Cake (CSC), Maize Bran (MB) and Rice Bran (RB) which are common feedstuffs for livestock in the Guinea Savanna Zone of Nigeria. The influence of these feeds and the feeding regime, water consumption, growth pattern and body conditions score of the animals under confined management system were also assessed. To achieve the desired results, a feeding trial of 364 days was conducted using 12 rams aged between 18 to 21 months and weighed between 11.5 and 15.5 kg. The parameters measured include Daily feed intake (DFI), lives weight changes, feed conversion ration, feed cost per unit of body weight change, nutrient utilization, free water intake, body measurements and body conditions score. The results indicated a variance of the above parameters depending on the period the feed are served and the type of feed. It was conclude that Yankasa rams have the potential to attain better body weight gains and body condition score on diets consisting of CSC, MB and GNH, among others. Among the numerous recommendations is that although small ruminates may relish fresh gmelina leaves, its feeding either alone or in combination with CSC or RB without MB inclusion should be avoided, to prevent weight loses.

Eric, A. O. (1999).

Performance of Savanna Brown Bucks Fed Pennistom Purpureum Combined With Leucaena Leuvovephala and or Gliricidia Sepium

The study evaluated nutrient utilization and body weight changes by savanna brown bucks fed pennisetom purpureum combined leucaena leucocephala and or gliricidia sepium. To carry out the research, nine male savanna brown goats were used and the feeding experiments lasted for 180 days during which the animals were blocked on weight basis and allotted into various treatment diets. The results showed that, dietary level of leucaena leucocephala above 21.5% of savanna brow bucks did not support growth to a large extent even when supplemented with energy source. Favorable changes in body weight were obtained when leucaeaan leucicephala was fed along with gliricidia sepium and that this combination could enhance the performance of savanna brown goat, An appraisal of the dressing out percentage values revealed that dietary combination of levcaenagliricidia could constitute basic diet for savanna brown buck if adequately supplemented with energy sources etc.

Department of Crop Production

Bakare, S.O. (2000)

Effect of Weed Interference, Seed Rate and Inter-Row Spacing on the Yield of Acha (Digitaria Spp)

Series of experiments, comprising seed rate, weed interference, inter-row spacing, weed regime were carried out on two accessions of Acha, Digitaria species to determine their effects on Acha grain yield and weed management. Six seed rates (5,10,15,20,25 and 30 kg/ha) were evaluated on both straggling and erect accessions between 1996 to 1998. The weed experiment has both weed free and weed-infested treatment plots from sowing to harvesting period. Three inter-row spacing 20, 30 and 40 cm) were also compared with broad cast methods of sowing. Results indicated that no seed rate or accession of Acha has any advantage over the other in terms of weed suppression. However seed rate for optimum productivity in straggling accession was found to be 24kg/ha while it was 26kg/ha for the erect accession. Thus, grain yield in the straggling indicated superiority over that of erect accession significantly. Meanwhile, the critical period for weed removal in Acha was found to be 4-6 weeks after sowing (WAS) and uncontrolled weed growth would cause yield loss of about 80%. It was recommended, among others that further studies be carried out in the multi-locational testing of the result of this experiment for confirmation in different ecologies.

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Francis, S. G. (1999).

Evaluation of the Usage of Agrochemicals by Small- Scale Farmers in Niger state

Three agro-ecological zones of Niger State Agricultural Development Project were evaluated. Data for the study was collected by means of questionnaire administered to randomly selected 300 farmers from the three zones. Data gathered was computer analyzed using the software Minitab, a statistical package employed for descriptive statistics. The study identified three categories of small-scale farmers e.g correct users, incorrect users and non-users of agro chemicals. The study further revealed that out of nine variables considered, only literacy level radio outreach and adherence to manufactures instructions were found to positively and significantly influence usage of agro-chemicals. Meanwhile, it was further observed that farmers are sourcing for alternatives for agro-chemicals for their scarcity and cost. The use and adoption of indigenous plant materials extracted from mistletoe leaves (parasites) found in various trees to combat insects during storage by small-scale farmers have not however, been documented. It is therefore recommended that further research work be conducted into these natural pesticides to confirm their active ingredients so that appropriate volume, interval and duration of use are made known.

Justin O.L. O.(2000).

Economic Analysis of Vegetable Marketing in Niger State and The Federal Capital Territory Of Nigeria.

The research is an economic analysis of vegetable marking in Niger State and the Federal Capital Territory of Nigeria. The emphasis include examining the market conduct, structure and efficiency, determining gender involvement in vegetable marketing, measuring spatial price and income variation and identifying the major problems facing the vegetable marketers in the areas. The researcher collected two sets of data through the use of questionnaires, which were analyzed using analysis of variance (ANOVA), Lorenz curve, bar chart, mean, percentage and frequency distribution. The results revealed that male dominance of vegetable marketing, decentralized vegetable marketing channel with many linkages, inefficient vegetable marketing, market structures and conduct were at rudimentary stage of development etc. The summary of the findings of this research is that vegetable marketing is profitable as a business but economically inefficient as a result of poor market conduct and structure with wide price and income variations in the study areas. It was recommended that vegetable marketers should form co-operative societies and government should provide adequate processing facilities etc.

Department of Fisheries

Ibrahim, Y. (2001).

Development of Rice-Cum Fish Culture Model Using Nile Tilapia (Oreochromis niloticus) (in Niger state)

The first step in achieving the objective of this study was to conduct a study on the status and development of the farming technology in the study area. The result of this study revealed that despite the great potentials of low land (Fadama) for the development of rice-cum –fish culture, only 0.37ha out of 496,000ha of available fadama is presently being cultured at experimental stage. The constraints identified formed the bases of this study. Then, a model rice-cum-fish culture farm was designed and constructed to conduct all necessary experiments. After series of experiments, the result showed that rice-cum-fish culture is feasible in Niger State and economical as in the Philippines. The study in view of the discovered potential of the study area for rice –cum –fish farming recommended that the Niger State government should initiate a policy in favour of implementing the project and also that the extension workers should mount campaign strategies for promoting the farming technology.

Ovie, S. O. (2003).

Macro-Nutrient Requirements of the Giant African Mudfish Heterobronchus Longifis (Vallenciennes 1840)

This is an experimental research carried out to determine nutritional feed for the Giant African Mudfish, heterobranchus Longifilis. To carryout the experiment, the heteobronchues longifilis fingerlings of mean weight of 0.97 – 0.01 were fed

with dry pelleted diets contouring 20.76%, 24.09%, 26.88%, 30.47%, 40.39%, 41.80% and 49.60% protein for 56 days utilization, nutrient digestibility and tissue composition were studied . Some of the findings of these experiment include that the fish grew best on the 14.25% diet. The result of another exposure reveled that the polynomial regression curve for the carbohydrate requirement was lower as the point at which is maximum could not be derived. The protein carbohydrate ration best for the fish was derived at 2.22 etc.The conclusion of the finding is that nutritional requirement of heterobranchus longigiles that are stated above offers fish farmer all that is required for the proper rearing of the fish and hence will improve the production of fish.

Tiamiyu, L.O. (2001).

Nutritive Value of Heat Processed Full-Fat Soybean (Glyeine) in For the African Catfish (Clarias Gariepinus) Fingerlings

The study assessed the use of heat (thermal and hydro thermal) and time regimes to improve the products in to diets of clasrias garipinus and finally use the best performed product to replace fishmeal at 0.75:50)25 and 100% levels. The diets were iso nitrogenous at 35% crude protein and iso-caloric at $3.5k \, calg^{-1}$. When TGX-1448 variety of soybean was thermally processed at various degrees centigrade and at different times, it was revealed that at 150^0c for 20 minutes, the product had the highest crude protein of 47.90% while at 32^0c for 30 minutes, it had the least crude protein of 13.20%. On the other hand, hydrothermally processed soybean at low, medium, intense and very intense heat at 30, 45 and 60 minutes showed a significant difference ($P<0.05$) in crude protein, TIA and phytic acid. After other experiments and observations, it was concluded

that heat treatments improved the nutritive value of soybean, glycine max (TGX-1448-2E).

Tsadu, S. M. (2002).

Some Aspects of the Biology of the Catfish, Bagrus Bayad Macropterus (Daget) of Shioror Lake

Live samples of species with sizes ranging from 32.50-2066.00gm, Total Body Weight (TBW) and 14.50-60.00cm Standard Length (SL) were maintained in captivity in indoor and outdoor and earthen ponds for study of some aspects of the biology and induced breeding over a period of three years. Their survival rates were 16.66% indoor concrete pond, 55% and 67% for outdoor earthen ponds respectively. Mortalities were attributed to injuries during capture, handling and inability to adjust captivity conditions. Various other aspects of the fish studied included their growth rate, water quality parameters, oxygen and temperature ranges needed for survival. The feeding habit, unique external features, sexes, reproductive stage and system and treatments were also covered by the study. The research concluded that under captivity, the feral stock can be brought up to spawing stage with adequate feeding and hormone inducement. The study recommended B.b macropterus aquaculture, especially polyculture with tilapia or other cichlid species. For further research, the study recommended the stocking ratio, breeding under captivity and effective hormone dosage for induced breeding of the species.

SCHOOL OF SCIENCE AND SCIENCE EDUCATION

Department of Geography

Halilu A. S. (1999).

Sediment Potential Mapping of a Part Of Usuman River Basin, FCT Nigeria Using Integrated Remote Sensing And GIS Techniques

The study is on sediment potential mapping of a part of Usuma river basin and the Federal Capital Territory Nigeria. An integrated remote sensing and geographic information system techniques was used for the analysis of the data. The thematic layers were superimposed on one another to generate the universal soil loss equation for each rendition. The image was classified generally and fifteen classes of Land use were identified and reclassified into elements influencing sedimentation intensity. Each element is classified into the potentials and the results were overlaid by multiplication as indicated in universal soil loss equation to give the various values. Idrisi for Windows was used for the integration of the various layers of data as well as for the analysis. The results give conclusive indication of the attributes of remotel sensed data as a useful tool for studying sediment potential of dams especially where ground trothing data is unreliable and access to basin is difficult, etc.

Morenikeji W. (1998)

Predictive Modeling of Inter-Urban Road Passenger Traffic in Niger State, Nigeria

This study examined the spatial and temporal patterns in inter-urban road passengers traffic from various public motor parks in Minna for a period of between 1992 – 1996. Additional data was collected from 150 travellers along 10 routes covered by systematic random questionnaire administered by systematic random sampling method. The result of the study showed that both the temporal and spatial analysis indicate that traffic volume varies with time and destinations. Other factors that were found to influence inter-urban traffic, though considered not enough were population and distance. Therefore six additional variables such as age, income and trip frequency of travellers, rail connectivity, mass transit bus frequency and daily bus trips were added. The analysis of these variables showed that three, trip frequency, rail connectivity and trips were significant, accounting for about 72% of the variations in the traffic data. The study concluded that the influence of these competing modes and individual characteristics of travellers confirms that social and economic factors may be more important in explaining traffic variations than the traditional population and distance factors. Future studies, exploring other models and putting into consideration the actual number of passengers per rail and mass transit busses, the fares and other variable were recommended.

Department of Physics

Akusu, P.O (2002).

A Study of the Theories of Super-Conductivity and the Application of Matlan in the Exact Numerical Analysis of the 2 Dimensional Attractive – And Repulsive – Hubbard Model

A detailed analysis was separately carried out for both the attractive Hubbard model and repulsive Hubbard model. The result suggested that Tc's (RHM) >Tc's (AHM) and that the AHM does not only afford a more stable state than the RHM, but also sustains its stability over a wider temperature range. It was also observed that the RHM exhibited paramagnetic contributions while the AHM gave clear signature of antiferromagnetic ordering of the Cu^{2+} spin in HTS. The study concluded that the use of the Matlab showed that the inadequacies of known numerical methods/tools might have greatly contributed in the inability to achieve the desired model that would adequately account for HTS.

Awojiogbe .O.B (1997).

Studies on the Application of Nuclear Magnetic Resonance (Nmr,Mri) In The Estimation of Human Blood Flow Rates

This study is a result of series of experiments conducted and to reports of experiences to answers various questions on the research topic. Thus chapter 1 consists of experience on why does blood flows the through 96,000 kilometers of blood vessels in human body in less than 60 seconds? and what is the

danger posed by any obstacle to the normal flow of blood in the body or nay obstruction in the blood vessels? Chapter 2 presents a background and basic introduction to the principle of Nuclear Magnetic Resonance as a non invasive method of blood flow estimation while Chapter 3 concentrated on the in depth review on application of NMR/MRI in the estimation of blood flow rate. In chapter 4, a general analytical solutions of Bloch equations for confine now wave Nuclear Magnetic Resonance (CW NMR) flow dependent magnetization and signals with spatially varying $rFB_1^{(x)}$ field was presented. Chapter 5 deals with the analytical solutions of the Bloch equations for CW NMR flow; while Chapter 6 covers the two kinds of power losses within a patient body introduced into the Magnetic Resonance Imaging coils etc. Chapter 7 provides an overview of the instrumentation requirements of a nuclear magnetic resonance system while Chapter 8 is an experimental and clinical studies of magnetic resonance imaging for blood flow estimation. Chapter 9 is a presentation of report on VIVO measurement of the instantaneous velocity distribution in the abdominal and ascending aorta of healthy volunteers. The study concluded that MR imaging of human blood using partial echo factor technique may have partial to evaluate patients with cases of stenoses or charp bends.

MASTERS THESES
SCHOOL OF ENGINEERING AND
ENGINEERING TECHNOLOGY

Department of Agricultural Engineering

Abubakar, A .S. (2001)

Design and Fabrication of Rice Reaper

The work is on the construction of a rice reaper. The instrument used involved a combination of basic engineering design considerations and other requirements, using locally available materials. The final result is a rice reaper that consists of a cutting unit, the transmission unit, the frame and the handle. When tested, results showed that the reaper has a field efficiency of 79.15% and a field capacity of 0.0338 ha/hr. It showed a remarkable improvement over the manual method of harvesting rice.

Ajani, Z. O. (2001)

Standardization of maize grains stored by National Strategic Grains Reserve (NSGR): a case study of NSGR Silo Complex, Minna

The study was conducted to check and test certain parameters of quality of the maize grains produced in Nigeria as published in the "Maize standards" by the Standard Organization of Nigeria (SON) in 1989. It was also aimed at resolving the dispute over the discrepancies between the amount of dockage estimated and the actual amount screened out after cleaning. In view of that, bulk density, moisture content, dockage content, damage and infestation levels were assessed. About 7019.39

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metric tons delivered to the NSGR, Minna between April 1999 and June, 2000 were sampled and assessed, independent of the official assessment. It was found out that the bulk density was higher while the moisture content was lower than the SON's quoted limits. Dockage screenings were found to be highly correlated with the dockage estimates. Based on these results and others, a maize cleaner/grader machine was designed and fabricated to facilitate assessment by grain suppliers. Performance evaluation tests with maize showed that the machine capacity is 1.12 tons/hr. The average cleaning efficiency was 77.9% while a 100% grading efficiency was achieved during the tests. The study concluded that dockage assessment at the Silo Complex is significantly different from the total screenings collected at the cleaning unit. It was therefore, recommended among others that comparisons be made between the screenings from the fabricated machine and those from the cleaning machinery of the Silo Complex.

Alabi, J. B.(2001)

Comparative studies of the Effects of different Construction Materials on the Performance of Grain Silos erected in Minna

The researcher carried out a comparative study on the performances of four 1.0 metric ton grain Silos erected in Minna that are exposed under the same climatic conditions.The result of the observation showed significant variations in their temperature. The temperature in the steel silo was highest by 43.7°C with clay silo recording the lowest temperature of 365°C. There were also variations in the temperature recorded within the silos, with the sand Crete silo exhibiting the highest temperature of 11.0°C etc. It was observed that the moisture contents of the grains remained stable in the silos except in the sandcrete silo where it rose to 24.7% in the 3ʳᵈ week of storage.

The findings therefore showed that the wooden and the clay silos are best in moisture and temperature control within grain bulk, but that their durability reduces with long exposure to sun and rain. The steel silo however, remains superior to the rest of them in this regard

Daka gol, F. A. (2001)

Determining of some Engineering Properties of Shea – Nut (Butyros permum Paradoxum)

This work determines properties such as engineering, physical and aerodynamic of shea – nut. These include among others, the size, shape, density, volume, specific heat, thermal conductivity, rupture point, coefficient of static friction, angle of repose and modulus of deformability. The major immediate, minor and geometric mean diameter for shelter and unshelled nuts were found to vary. The values obtained for mass, volume and density of shelled and unshelled nuts also vary. It was concluded that the principal dimensions determined using a pair of calipers, surface area by contact printing method, volume by water displacement method and terminal velocity by analytical method varied widely with an approximate normal frequency distributions. It was recommended that considering the potentials of the contribution of sheanuts to the national economy if fully tapped, all the processes above should be mechanized.

Istifanus, M. B. (2001)

Development of a Manure Spreader

The research is centered on ˙ the development of manure spreader using the following properties and their values for the

design; 791.799kg/ms, angle of repose, 40% coefficient friction, 088 specific volumes, 0.0013m^3/kg and moistu content of 44%.The machine consists of the followir components; the hopper which holds the manure durir spreading the manure agitator which stirs the manure fi uniform flow, the frame which carries all the oth components, the spreading flails which spreads the manure as flows down under gravity, the telescopic shaft which tak power from the tractor and the tool bar which is used connect the whole machine to the tractor for trailing whi spreading the manure.The machine on completion was teste for the rate of application, field capacity, and uniformity (spreading and efficiency of discharge. The results obtaine were very satisfactory for a prototype design. It is howeve recommended that further work be carried out to design higher capacity machine.

Ojo, O.O. (1998)

Quantitative and Qualitative Analysis of Wastes fror Nigeria's Brewery Industry

The study was based on the Guinness, Nigerian and Son Breweries Plcs. In addition to monitoring the qualities o wastes generated, nine samples from each of the Brewer's We Grain (BWG) and spent liquor were collected for analysis. The result indicated that the combined quality of solid wast produced by the companies is 14,500 tons while 2.7 million o hectoliters of liquid wastes were produced per year. The proximate analysis showed that the BWG can substitute cerea for livestock feed and can also be used for organic manure an the production of "Bio – Gas". The qualitative test on the spen liquor shows that the Total Dissolved Solid (TDS) was higl and indicate that there will be environmental degradation i proper disposal treatments are not adopted.

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Department of Chemical Engineering

Abdullah, B. M.(2001)

Computer Aided Design Module for Multi – Component Distillation Column (Fug – Linear Algebra Method)

A computer aided design module was developed for a multicomponent distillation column involving single, narrow boiling feeds. Fensko, Underwood and Gilland shortcut methods were combined to obtain the initial estimates of the design parameters. The actual parameters were then calculated using the linear – Algebra (via Thoma Algorithms) rigorous solution. The result showed that there was a good match between shortcut result and the rigorous result. Therefore, product purity of 3 wt% maximum iC_5 and /wt% maximum C_4 in distillate and bottoms respectively were achieved in the shortcut method but not in the rigorous method. The research recommended that the Computer Aided Design module could be further improved to handle wide range boiling mixtures by including enthalpy balance.

Abdulrahman, M.(2001)

Evaluation and Modeling of Effluents from Wuye Wastewater Treatment Plant

This study was carried out to determine the effectiveness of the plant and the effect effluent has on the Wuye River of the Federal Capital Territory of Nigeria. Parameters measured were the temperature, P^H, COD, BOD, total hardness, TSS,

NO_3^-, NO_2^- Cl-, Mg^{2+}, Ca^{2+} and total coliform over a one year period i.e. September 1999 – August, 2000. Results obtained showed that in general, the TSS, NO^{-3} NO^{-2} BOD, COD pH and temperature of the effluents are beyond FEPA standards whilst the Mg^{2+} Ca^{2+} and total Coliform are within FEPA standards. These analyses suggested that Wuye waste water treatment plant is over stressed and a complimentary treatment plant is required to cope with increasing waste water. The study recommended that more sewage treatment plants among others be constructed.

Adeniyi, O. D.(2001)

"Mathematical Modeling and Simulation of Cation Depletion in Soil Water"

The project developed mathematical models based on rate of reaction and empirical data that can be used to predict the extent of soil saturation as a result of weathering of parent rock and also as a result of fertilizer application. The result showed that the depletion of ions in soil is greatly dependent on the type of soil, the P^H of the soil water, interaction among the cations present and removal by leaching, plant and living organisms.

Bawa, A. A .(2001)

"Evaluation of Technological Process for the Production of Instant Water – Soluble Sobo (Hibiscus sabdariffa) drink

The project is on a non alcoholic beverage widely marketed in Nigeria. However, the market potential for Sobo drink is yet to be fully exploited and the major hindering factor is the uncoordinated production technique and the improper

characterization of the product which may lead to degradation in the nutrient value. This work investigated the production design and instant water soluble sobo drink.

Bello I. B. (2001).

Mathematical Modeling of the Dynamic Behavior of a Double Effect Evaporator System

A mathematical model of the dynamic behavior of a double effect evaporator was developed and numerical techniques presented for the application and investigation of evaporation system. In this research work, models were developed for single and double effect evaporation systems. The models were tested using laboratory experimental data obtained from evaporation of known concentration of sugar solution using a double effect evaporator.

Diekola. M. (2001).

'Physico – chemical classification of Nigerian cement" July 2001

The project was on the ASTM and Bs standard. Titrimetric/qravimetric methods of analysis were used. Four major cement samples using various physico – chemical method were analyzed; two locally manufactured and two imported.

The results showed that the locally produced cement i.e. elephant and Ashaka cliffers in the physico – mechanical properties confirm with the International ASTM and British Standards.

eucalyptus camaldulensis as a function of three operating parameters. Three 2 models were used and only two satisfied the C... test.

Jibrin, D. M.(2001)
Recovery of Silver from Spent Photographic Films

The project work investigated the possibility of recovering silver from spent photographic films using chemical precipitation method and employing three different chemicals namely, sodium hydroxide, sodium hypochlorite and sodium cyanide. An extract of 9 - 20%, 8 – 16% and 7 – 12% were obtained using sodium hydroxide, sodium hypochlorite and sodium cyanide respectively.

Jimo, A. (2001)

Chemical Deterioration of Long Serving Cement- Based Structures in the Lagos Industrial Areas

This project investigated the effect of industrial pollutants on cement – based structures. Samples of cement based structures of different service years were collected from Apapa and Ilupeju Industrial Areas of Lagos State. A sample of fresh sandcrete block was collected from a block industry in Minna to serve as control sample. Experimental analyses were carried out to test for the presence and effect of some industrial pollutants. A predictive model equation for diffusion rate of these pollutants into cement based sandcrete block was developed. The results showed that industrial pollutants are dangerous to cement based structure. The deterioration rate of cement based structure exposed to aggressive acidic oxides is more pronounced in industrial areas compared to areas with fewer industries. It was also found out that the diffusion rate of these pollutants within the cement- based structures depends on

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the formation, resistance and solubility of new boundary layer within the structure matrix.

Mohammed, A. (2001)

Evaluation of the Technological Characteristics of a Protype Organic Fertilizer Manufacturing Plant

The research is on the conversion of organic waste into useful products such as organic fertilizer and biogas. The work evaluated the influence of various technological characteristics such as temperature, pH, residence time, feed composition moisture content and microbial activities on the production of organic fertilizer and biogas in a prototype organic fertilizer plant. The analysis revealed that the rate of production of both the gas and organic fertilizer depend on these technological characteristics. The study therefore recommended that the prototype plant can be used in the local production of organic fertilizer.

Mohammed, B. I.(2002)

Evaluation of Technological Process for the Production of Compound Spices

This project developed and evaluated the technological process route for the production of some compound local spices and determined the microbial Load and Chemical composition of the compound spices.The result showed that some compound spices were highly contaminated with micro organism. Isolate samples B were identified as salmonella, Bacillus and E coli bacteria, Isolate sample A as staphylococus areus, streptococcus and the fungi isolate as Aspergillus niger, aspergilus flavurs and microsporum caris. The bio- load of the

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spices ranged from: 1.64×10^5 to 2.09×10^2 cells per gram of spice.

Mohammed, U. G. (2001)

Development of a Model for a Two reactor Biological Fluidized Bed System

Eight (8) model equations were developed for a two reactor biological fluidized bed made up of an anoxic reactor and oxygenic reactor. Equations were used to solve a test problem from an activated sludge system. The volume of the two reactors from a test problem activated sludge system are $3370m^3$ for anoxic and $3790m^3$ for oxygenic reactors while the volume of the reactors obtained from the model for biological fluidized bed are $983.27m^3$ for anoxic and $854.88m^3$ for oxygenic reactors at a concentration of $36mg//$ for $NO_3 - N$ and $550mg//$ for carbonaceous BOD. The volume of the reactors in biological fluidized bed was found to be smaller than the corresponding volume of the reactors in activated sludge system. The results therefore, confirmed the observation that reactors in biological fluidized bed system are smaller in size. The study therefore recommended among others that biological fluidized bed system should be used in all sewage treatment since it involves high volumetric rate of reaction.

Nwafulugo, F. U. (2001)

Determination of Atmospheric Pollutants Concentration Using Meteorological Data

The researcher studied the influence of concentration of air pollutants on weather elements such as temperature, pressure,

humidity for a pollutant dispersion period of 24 months for Jos and Kaduna. The plume dispersion equation relating pollutant dispersion with dispersion time (Gwendolyn, 1993) was developed to obtain equation relating pollutant concentration with temperature, pressure and humidity. The result obtained showed that the rate of pollutant emission has a direct effect on the temperature profile of that environment. With increased pollutant emission, the humidity of the atmosphere decreases and vice versa. The study therefore concluded that the developed predictive model for determining the effects of pollutants concentration on weather elements such as temperature, pressure and humidity can be used for any given city.

Olanrewaju S. A. (2001)

The effects of Amorphous Fortifiers on the Thermomechanical properties of Urea – formaldehyde Resins

The study is an improvement on the UF resins sensitivity to hydrolysis and thermal degradation with the aim of enhancing their stability and durability for exterior non structural applications. The active principles from most amorphous substances were used as fortifiers. Each fortifier was added to the resins separately during and after the resin synthesis. The UF adhesives were cured with ammonium sulphate and subsequently used for bonding some wood products.

The results showed that there was reduction in the tendency of the modified UF samples to crack and fracture. Moreover those modified adhesives that were not cured with curing agent produced wood products with improved resistance to water and shear stress. It was therefore concluded that incorporation of amorphous fortifiers offers promises for improving the

durability and stability of urea-formaldehyde bonded wood products.

Senewo, G. (2001)

"Computer Aided Design Module of a Shell and Tube Heat Exchanger using Kern's Method

The research is on the use of a computer system (a configuration of hardware and software) as a tool for engineering design,with the aim that automation will lead to increase in productivity and product quality. Shell and tube exchangers are the work horses of the process industries, providing a great deal of heat transfer surface in a rugged configuration to meet the requirements of various applications. In the Computer Aided Design of a shell tube heat exchanger, a sample problem was taken and the problem was solved using manual calculations and CAD module programming language. The major results were found to be identical and the comparisons of the results showed a great similarity between the manual calculation and Computer Aided Design program.

Utebor, M. M. E. (2001)

"Computer Aided Design Module on Gas Absorption Column using Sherwood and Holloway Method

The research is on the development and application of a CAD module for the calculation of gas absorption column, diameter and height, where water was taken as the solute free solvent and SO as the solute gas. The solute gas is in dilute mixture with air and both phases flow counter-currently with the gas pumped from the bottom of the column and the liquid from the top. The modules used a data based (databank) for packing and

some physical properties of both phases. This was tested by varying packaging materials, temperature and percentage of the flooding velocity. The result obtained makes provision for optimization of design parameter with varying design specification.

Department of Civil Engineering

Ezekiel, B. C. (2002)

Performance of some Concrete Properties at High Temperatures

Concrete made with different sizes of coarse aggregates and w/c ratios from two types of design mix (1:2:4 and 1: 3: 6) were investigated to determine their strength and weight when exposed to high temperatures of between $40 - 200^0$c. The results showed a mathematical relationship between compressive strength of concrete (fc) of two design mixes and (w/c) under selected temperatures (T). The relationship revealed that the higher the temperature within the range stated above, the higher the strength and the lower the water – cement ratio. The research therefore recommended among others that good workmanship, qualified technical supervision and quality control should be ensured during the construction of concrete structures so as to enhance the durability and performance of these structures under unforeseen circumstances.

James, O. (2002)

The Properties of Light Weight Concrete made from Crushed Palm Kernel Shells

The study considered crushed palm kernel shells as a possible light weight aggregate for the production of light weight concrete. To carry out this, the physical properties of palm kernel shell were investigated. Trial mixes of ratio 1: 11/2: 3 were made for each of the crushed shell and unrushed nut aggregate. Cubes were cast and cured for different length of

time (i.e. 7, 14, 21 and 28 days) after which they were crushed and their compressive strengths determined. The findings proved that shell concrete with compressive strength ranging from 1.07 N/mm^2 7.9 N/mm^2 covers the range of light weight concrete for both mansory concrete (7N/mm^2/ usage. The summary of the findings is that palm kernel shell (crushed or uncrushed) could be used as insulating concrete.

Mohammed, B. (2001)

An Assessment of the Impact of Agro – Chemicals on Surface and Ground Water in Tungan Kawo Irrigation Scheme

Samples of surface and ground water for the study were collected in six different locations within the irrigation scheme for a period of one year. Weekly analysis of nitrate, phosphate, dissolved oxygen, pesticide concentrations and pH levels were carried out. The increase in nitrate and phosphate levels which were observed was attributed to the application of fertilizers. Similarly increase in the level of hydrazine, dissolved oxygen and PH levels were discovered to be as a result of application of pesticides and impact of the embankment respectively. Nitrate levels was also said to be high and that was attributed to sewage seepage from pit latrines from a neighboring village. Consequently, it was recommended that the use of surface waters downstream of the irrigation scheme should be banned for drinking as a result of this pollution.

Oritola, S. F. (2002)

Investigation into the Causes of Electric Transmission Concrete Pole Failures

Concrete poles manufacturing companies within Alaja, Niger and Kwara states were visited to study their manufacturing processes and method of operation. The study discovered that among factors that often result into concrete failures include; windage on pole and conductor materials, conductor sag – tensions, swing angle on conductor from the vertical position, pole loading and pole positioning on sloping terrain. In view of these problems, square concrete pole sections suitable for electrification purpose were designed. Based on this design, two square concrete poles were constructed by different methods to provide basis for comparison. A rig was also constructed to test the strength of the poles thereby determining their suitability for electrification work. The study observed that since all concrete manufacturers did not have provision for performing bending test on poles, they should be compelled to provide same on their sites and that the Ministry of Mines and Power should conduct routine checks on their activities to ensure that they comply with "due process", Additionally, F. U. T. Minna should look into further development of the concrete pole – testing rig to serve as basis of providing consultancy services for pole manufacturers.

Richard, Y. D.(1999)

Design and Cost Implication of an Electric Transmission Tower: a Case Study of 132kv Tower

A 132 tangent (suspension) tower of steel lattice structure was considered. Statical (sic) methods were employed for the analysis of the structure and the limit state design approach

based on Bs 5950 was adopted for the design. A cost comparison between the tower designed and constructed by a foreign company and that designed and to be constructed by locally available material indicated that the cost of the former was about 70% higher than the later.

Muoka, M.O. (1998)

Standardization of Timber Roofs of Low-Rise Residential Buildings

The study identified and harmonized the vital elements necessary to achieve the acceptable standards in the construction of timber roofs of low rise residential buildings. The following methods were used to carry out the research; collection and study of some building drawings and structural design of timber design roofs, market survey to note the availability or otherwise of the required building materials, site buildings to access the handling of timber and method of construction of timber roofs and analysis of timber trusses. Findings include that building drawings presently do not include structural timber roof drawings. That most timber roofs are handled by traditional method of construction. In most sites, timber is poorly handled and construction processes are left in the hands of untrained and semi-skilled carpenters. Roofing timber sections in most cases are left in the open without protection from rain or sunshine. Increase in moisture content of timber above 18% also promotes decay and disintegration. Standard methods of construction such as pre-fabrication before erection, use of temporary and permanent bracings in construction, joint fastener spacing schedules were usually found to be neglected, etc.

Department of Mechanical Engineering

Abubakar, M. G. (2001)

Development of An Intergrated Rice Milling Plant

In an attempt to improve the quality of Rice through better processing technology, this project focused on design and construction of an integrated rice milling plant. In this system, drying of the rice is done using a fluidized bed drying technology before it is de- hulled in the miller. The parameters of fluidized bed drying are calculated to establish minimum fluidizing velocity, bed height and pressure drop. The various forces at play in the rice de-hulling machine during the process of de-hulling are analyzed and calculated. Rice at 32% moisture content was dried to 18% moisture content and then milled in the huller to obtain the milling recovery and co – efficient of husking.

Adaokoma, A. (2002)

Design and Fabrication of Multi – Purpose Dehuller within the Subbsaharran African Resgion:

The design and fabrication of a multi – purpose de-huller was conceived with the aim of addressing the problem of the rural peasant farmers within the Sub-Saharan African region. The de-huller designed in this project can be either powered by gasoline engine electric- motor or manually operated by simple adoption. The design concept, choice of material, production process and inter changeability of component parts are done to conform to existing principles and theories. The machine has been tested and found to perform above 75% derived efficiency.

Adaramola, B. A.

Performance Analysis of Lubricating Oil (Tellus 68) on Hydro – Power Turbo Generator

Experiments were carried out to determine the physical and chemical properties of lubricating oil, Tellus 68. The result of the test analysis conducted in the laboratory on fresh samples of oil showed that Tellus 68 is satisfactory for lubricating the hydro units. However the test analysis on used oil showed a lot of deviation from the values of the properties recommended by the manufacturers for lubricating the hydro- units. The annual maintenance of 1999 on the unit was observed to investigate the temperature variation in the hydro units as a result of chemical reactions between the machine parts and the bearing oil. The annual maintenance was followed carefully to ascertain whether the cooling system was responsible for the temperature rise. It was discovered that the temperature rise was covered by the combined effects of the neglect of proper maintenance and reuse of degenerated quality of reconditioned Tellus 68 bearing oil.

Aderle, A. A.

Investigation of Local Refractory Material for the Production of Furnace Crucible

The project has explored the results of different researches on refractory clays to produce crucibles using various combinations of pre – heated kaolin (coarse grogs fine grog) and clay binder. Five specimens of crucibles were produced using different portions of the materials mentioned above. They were tested by melting Aluminum scraps in them and were found to perform adequately.

Aliyu, I.(2000)

Development of Manually Operated Hand Pumps for Rural Water Supply

The need to solve portable water supply problems of the rural areas gave rise to the development of different types of hand pumps to raise water from ground level to surface level for both drinking and irrigation. Though in most of these designs, slight variations occur in the material, they apply basically the same principles of operation that is; up and down movement of the pump handle, the major problem associated with the method of operation is the fatigue and low pump efficiency. The design is simple so that it can be fabricated in many workshops using simple equipment and tools. From the experimental results it follows that the one with gear drive discharges more water than that without gear drive pumping in the same interval of time.

Arowolo, M. O. (2000)

Investigation of Local Clays for the Production of Electric Cooker Plate and Electric Insulator

The research is on the investigation of local clays for the production of electric cooker base plate and electric insulator. The samples were investigated for the following properties: moisture contents (%), firing shrinkage) (%), thermal shock resistance, apparent porosity (%), plasticity (%) water absorption (%), solid density, bulk density, specific gratuity, permeability, refractoriness and chemical composition. Furthermore effort was made for the production of electrical insulator for 11kv low tension wire and 33 kv high tension wire of various wires. The mould was made from prepared Paiko clay and the production of electric cooker base plate

which accommodated 2000 Watt coil as heating elements.Detailed design effort investigation and calculation absorption are presented in the work.

Atah, A. J. (2003)

Inventory Management and Control in the Oil Industry. This study was carried out with the hope of evolving a purposeful policy on inventory control for organizations. For effectiveness, the study sought to eliminate manual implementation of inventory management and control in a dredging firm via computerization. An application software based on Microsoft access (CMSD!) was developed to answer such questions as how should inventory be monitored; when to order and how much to order; and how to tackle the numerous inventory constraints in the oil industry in Nigeria. The developed CMSD1 is an interactive one that is easy to understand, network ready (both LAN and WAN), compatible with other applications, easy to customize, accepts data from other databases, developed with other applications, possess ability to transmit data over the internet and above all, it has a highly secured database that would create the needed checks and balances as well as auditing needs of implementing an inventory policy. The estimated cost of this project is thirty thousand Naira, which is far less than the cost of any application software ever developed in the world. The study concluded that from investigations conducted, no dredging industry uses advanced database management system to operate universal system in order to sustain continuous production. It was therefore, recommended that the simulation designed be made available to as many dredging outfits as possible to enable improvement on the existing mode of operation.

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Attah, O. P. (2001)

Development of Computer Software for some Mechanical Operations and Electrical Devices

The research developed a programme to analyse mechanical engineering theories and practice such as blanking and piercing, deep drawing and extrusion as well as electrical engineering theories and practice such as single phase power transformers, power supplies, transistor circuits, instrumentation amplifier. The outcome of the computer software was remarkably satisfactory and adequate where several results bore almost exact values with the calculator obtained values which were as control results. C^{++} programming language was used in the development of the progamme because it is the most popular object oriented programming language widely used in commerce, industry and the academia.

Buhari, A. S. (2003).

Design Construction and Testing of Inter-Locking Block Making Machine

The study is on the construction of a dual compartment inter – locking block making machine. The materials selected for the construction include mild steel pipe and the machine frame to be made from an L – section steel to reduce the overall weight of the machine. For the compaction units – ramming handle and braces, the ejection mechanism which are to be made from mild steel plates and rods were also included. Bolts and nuts were also produced locally and the end product was tested. The manually rammed machine has an estimated capacity of one hundred and ten (110) blocks per hour. The crushing strength

of blocks was evaluated and was estimated to be an average of 31.7 MN/M^2 at 28 days.

Dahunsi, O. A. (2003)

The Development of a Model and Software for Gas Turbine Engine Condition Monitoring

This study was carried out on the pretext that modern fracture mechanics principles showed that failure in mechanical components do not occur as suddenly as we think. Failure starts with initiation followed by progressive and prolonged propagation stages. This knowledge makes it imperative to review maintenance philosophy in use. A modern maintenance strategy whose capability covers the detection of failure, hindering of its propagation, enabling the prediction of failure and enhancement of diagnosis as applied to gas turbine engines was presented. Inferential statistical approach to data analysis was adopted for the processing of the performance and vibration monitoring data – estimating the mean and the confidence intervals for each parameter studied. The summary of the results showed that the average percentage range of the data points that fell within the 99% probability based confidence interval was between 49.5% and 63.74%. Additionally, the result of the laboratory experiments and spectrometric oil analysis procedure to check the properties and composition of the lubricating oil was highlighted. Computer spreadsheet analysis based model was developed. Computer software prepared with Quick Basic 45 compiler was also presented for the purpose of data analysis and trend monitoring. The study concluded that condition monitoring analysis based on this method has been demonstrated through case studies of seven different gas turbine engines with the trend of integrity of the engine being presented graphically. The study therefore recommended that condition based

maintenance is useful and applicable to all categories of equipment and machinery, among others.

Edomwoniyi, U. G. (2001).

An Investigation into the Determination of Mixture Strength of a Petrol Engine using the Thermal Conductivity of Exhaust Products

The methodology for using the thermal conductivity of CO_2 and 11 in an exhaust gas to determine the air – fuel ratio or mixture strength of petrol engine has been presented. To validate the methodology an exhaust test rig was constructed for the purpose of experimentation. The analysis of the results show that rich mixture produces more hydrogen in the exhaust and with weak mixtures, the carbon dioxide contents increases. Since the product of combustion consists of carbon monoxide nitrogen and oxygen, carbon dioxide has thermal conductivity as much as that of air, it is the content of CO_2 and H present that varies the mixture strength.

Epapala O. L. (2002)

Design of Inventory Software Package for the Management of Spare Parts in Auto Mobile Workshops

The study presented the design of an inventory software package for the management of spare parts in automobile workshops. The system has been designed using modulo concept with pull – down menu. This is to allow flexibility in the system design procedure so that any organization whether sales and/ or maintenance oriented may be able to adopt the system.

The various processes involved in the inventory control cycle of auto mobile workshops; procurement requisition, storage, allocation, replenishment as well as planning and control modules which handle the problem of determining when to order, optimum quantity of spares required, movement analysis, xyz analysis and ABC analysis which takes care of spore usage, are built into the program. The software also handles the generation of frame: purchase or material requisition forms etc. Evaluation of the software has shown that the entire module built into it functioned as expected. Results from the various modules were in agreement with those obtained with a hand held calculator. The package was written with visual basic software and then compiled to an executable file so that it can run as an independent program.

Jonathan C. O. (1999)

Computer Assisted Design Selection of Power Transmitting Elements -V Belt Gears and Shaft

In this study computer programs were written to serve as a tutor in the teaching of Mechanical Engineering course in the universities. The program is used in the designing/ selection of machine elements like V – belts, Roller Chains, Spur Gears, Helical Gears, Bevel Gears and Shafts. This is to reduce the problems identified in the teaching and understanding of the course. Quick BASIC language was used in the writing of the program. It is compiled to run as a stand- alone while the source program is included in the text and in a 3.5in diskette for easy access and modifications to suit one's purpose. They are made up of six modules and three sub modules with its controlling program.

Kareem, O. A. (2002)

Design, Construction and Testing of a Manually Operated Sprocket Water Pump

Efforts have been made in this project to design a sprocket water pump for use in local areas and even in urban centers where the mechanical water supply is erratic. In the design of the pump, some of the principles and parameters for the plunger type have been taken as the basis for the design. The washers (valves) are located evenly along the endless chain, making a close fit with the pipe inner diameter so as to retain its enclosed water as it is running inside the pipe. The retained water was discharge at the outlet. The pump is designed for a shallow well of about 3 meters deep and can serve the deeper well provided the tap can be run through. In the course of testing, six test runs were made and tabulated. The graph of the volume of water discharged was plotted against the time taken. The flow rate obtained is 0.35 L/s and differs a little from the theoretical value of 0.5L/s, due to the fact that the human effort is not constant per time which can be controlled by automation. The cost analysis of the initial capital requirement was estimated at thirty – three thousand and fifty naira only – but due to the cost of machining and over- head cost, the total amount required is estimated to be fifty thousand naira only.

Lawal, S. A. (2002)

Development and Production of Cutting Fluids from Fixed oil for Machining Operations

The study used various parameters that are needed to verify a fluid so as to be considered as a coolant for machining operations. Four different samples of fixed oil,' which are available locally, were used in developing the various samples

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of cutting fluids. These cutting fluids were tested by considering the ability of each sample to effectively perform as a coolant during machine operations. Effect of the cutting fluids on the hardness of the material used as work piece was equally accounted for. Detailed chemical analyses such as acidic value, viscosity, including others were all carried out on each sample. The existing cutting fluid that is already in use (solubleoid in water) went through all the above mentioned tests and the data obtained were compared.It was discovered that when the samples of oil were used as coolant during machining operation, the maximum cutting temperature obtained by sample B (groundnut oil) was 71.39^0C which is the lowest compared with other samples. The viscosity of sample B (groundnut oil) was found to be the highest. Therefore, sample B has more lubricating effect, which helps in generating less heat during cutting operations.

Nwafor, C. N. (1999)

Influence of Cement – Sand Plaster on the Strength of Sand Crete Block

The study examined the influence of cement – sand plaster on the strength of sand Crete blocks. The variation of this influence with three different mixed proportions was also investigated. Test were carried out on eight, sandcrete blocks which were molded using the same mix 1.6 (cement sand)

Ogwuagwa, O.V. (1996).

Design and Analysis of Clay Roofing Sheet Production System

The design and analysis of manually powered clay roofing sheet production system is presented in this study. The design

presented in this report compromise of four major units: Clay ball roll- crusher, mixer, roofing sheet roll and roofing sheet press. From theoretical analysis based on a process speed of 10 revolutions per minute, the production rate of the plant was determine to be 30 roofing sheets (390mm wide x 600 mm long) per hour.To minimize fatigue during mixing, it is recommended that the mixer should not be filled beyond 425m limit. The cost analysis of the initial capital requirement was estimated at seven hundred and one thousand, six hundred and fifty naira – (N701, 650.00) only.

Olcoroator , C. (2000)

Evaluation of some Nigerian Clay for Producing Furnace Bricks

This project was aimed at determining the suitability of Nigerian clays for producing furnace bricks and to determine the temperature at which it can best serve this purpose.The clays of chanchaga. Kpakungu, Zungeru and Bida were tested for physical, mechanical and chemical properties.

Paul, O. A. (2001)

Development of Computer Software for Some Mechanical Operations and Electrical Devices

In this research, software was developed for analysis of mechanical engineering theories and practice such as blanking and piercing, deep drawing and extrusion. The software also covers electrical engineering theories and practice such as single phase power transformers, power suppliers, transistor circuits, instrumentation amplifier. C^{++} programming language was used in the development of the program. It was recommended that the Department of Mechanical Engineering

should seek to have its own computer laboratory mainly for *computer software development, as mechanical engineering* drawing by T – square and desk/lap top drawing boards are fast becoming obsolete.

Shaba, G. (2002)

Design and Construction of a Mini Lime Plant

A wood – fired kiln was designed and constructed with refractory bricks. The refractory bricks were produced from missing kaolin and sawdust, allowed to dry for three days and fired inside a kiln to a temperature of 1000^0c for five hours. Experiments carried out on the calcinations of limestone to lime in the kiln proved that lime stones of small sizes calcined faster, possibly due to quicker heating up which allows for the faster escape of carbon dioxide from the lime stone. Duration of firing was found to affect lime yield. Chemical analysis of the lime stone and lime produced was done to help determine the degree of calcinations of the lime stone. The product yield from the percentage of ca0 is 99.7% in the lime. This indicate a very high degree of calcinations from the lime stone to lime.

Tyem, E. J.

"Design and Construction of a Vibrator – Compactor for Production of Roofing Tiles"

The researcher designed a vibrator-compactor for the production of concrete roof tile using locally available materials. The excitation velocity, force transmissibility of the vibrator, the strength and rigidity of the major parts of the machine were obtained by the use of basic strength, deflection, bending moment equations with some reasonable factors of safety. Efforts were made to reduce cost, sophistication, noise,

dust generation, high electrical consumption and risk of accident in the machine. Care was taken in ensuring dimensional accuracy and proper alignment during construction. This has resulted in the design and construction of a simple machine which has an efficiency of 66.67%. The design is for small and medium scale industry operations.

Umoru, T. E. (2000)

Design and Fabrication of a Motorcycle Trailer using Locally Available Materials

The curiosity as to how else the capabilities of a motorcycle can be increased and the curiosity as to what else should be introduced to increase the options for haulage of goods, led to the design and construction of a trailer that can be towed by a motorcycle safely by and efficiently on our rural roads. A trailer having a capacity of 0.725m' was designed and fabricated. It was coupled to the popular motorcycle of 100cc used within the environment for the towing. The load reactions, stresses and sheer forces on the frame, axles and hitch were analyzed. Through series of test runs, it was discovered that the pay – load that is towed in stability is 230 kg (circ a 4.5 bags of cement).

SCHOOL OF ENVIRONMENTAL TECHNOLOGY

Department of Quantity Surveying

Ajayi, M. T. A. (2002).

Financial Allocations by State Governments to General Administration and the Infrastructural Sectors

This study provided an insight into financial distributing parameters such as population, population density, geographical area and number of Local Governments by 20 Nigerian States. The inability of State Governments to provide infrastructural facilities and distribute them accordingly to every strata of its jurisdiction prompted the aim of this study which is to identify the priority areas of governments in financial allocations process. The data gathered revealed a low R^2 range of between 0.1% and 34.0%, which suggested that distributing parameters are not considered by the state government in resource allocation. On the other hand, a range R^2 from 14.2% and 49.22% implies that General Administration is a priority sector over infrastructural facilities. The need for Organized Private Sector (OPS) initiative and the consideration of population density, number of LGAS for resource allocation were recommended.

Department of Architecture

Abubakar, M. (2003)

Design Proposed for Printing Centre, Minna Nigeria with Special Emphasis on Circulation:

This study is on the role which a printing centre will play on the economic growths and integration of Niger State and the country at large. The author identified that with vast development taking place in Minna, in every sector of the economy, the role of the printing press cannot be over emphasized. He further emphasized the need to develop Minna in such away as to accommodate all human activities conveniently.

Abdullahi, B. A. (2001).

Land scope design for leisure parks: A Case Study of Proposed Ahmadu Bello University Leisure Park, Zaria:

The research succeeded in designing a compact land scope for leisure parks that would not only be useful to Ahmadu Bello University but also other institutions of higher learning and important public places in the country.

Adebayo, O. F. (2003)

Design Proposal for a Games Village Minna, Nigeria, with Emphasis on use of Low Cost Building Materials:

The thesis highlights the need and benefit to be derived from the establishment of a games village in Niger State. The basic requirements for the setting up of the game village are

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identified. The architectural designs for the project are discussed. A careful study of the thesis will provide the basis for the development of a game village not only in Niger state but in all the states of the federation including the Federal Capital Territory, Abuja.

Adesina, A. E. (2003)

A Design Proposal for Groundnut Processing Industry Kano, Nigeria with Emphasis on Effective Natural Lighting:

This research aimed at providing a befitting groundnut processing industry that would process groundnut into different products for both local sales and export to foreign nations. The researcher employed the 'Action Research' methodology to carry out the research. In designing the structure, the researcher also considered the site, activities around the site, existing structures and basic amenities present. The researcher said that in the present design, there is no predetermined end for the forms but the final end of the form was a result of arrangement of functions based on their relations. It was therefore concluded that the use of effective natural lighting in industrial building enhances performance of workers and reduce energy cost. The use of effective day lighting was also recommended in view of its numerous advantages.

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Aliyu, A. (2003)

Design Proposal for Building Materials Village Minna, Nigeria, with Emphasis on Security and Fire Safety

The research was devoted to fostering a planned and well co-ordinate building materials village in Minna, taking into considerations security and fire safety for the users. In the course of the study, the author identified insecurity and fire disasters to be associated with improper planning, many entrance roots to the market, lack of communication facilities, arson, electrical fault, natural lightening and domestic fire among others. The recommendations put forward by the author if implemented by the state Government will reduce to the bearest minimum the incidences of insecurity and fire outbreak.

Anifowose, K. J. (2003)

Design Proposal for Modern Fire Service Station, Offa, Nigeria

The researcher exhibited a lot of concern over the destruction of life and properties done during fire outbreaks in his area of study. He therefore made a proposal for, and designed an efficient and easy functional building that would link the Local districts of Offa with effective fire service in all ramifications.

Arobadi, A. R.(2003)

Design proposal for national music recording Centre, Abuja, Nigeria with Emphasis on Acoustics:

The researcher defined the word music in all possible terms. He highlights the methods of sound recording and production

The role of acoustics as an important aspect of sound and its propagation were identified while existing music recording studios were analyzed and their pros and cons. He further appraised the geographical characteristics of Abuja, made site analyses and identified site selection criteria, site location, inventory, accessibility and environmental problems.

Galadima, M. B. (2003)

Design Proposal for Central Market, Abuja, Nigeria with Emphasis on Security:

The researcher, in this work made a proposal for the establishment of an Abuja central market. He identified architectural, security and planning problems associated with various markets in the country. Finally, he came up with an architectural design, of international standard and conducive place for buying and selling which guarantees adequate security.

Ibrahim, F. T. (2003).

Design Proposal for a Modern Dairy Factory Suleja, Nigeria

The production of dairy products in Nigeria today has become a very important business. However, the conditions under which these products are produced are poorly designed not properly maintained and left in poor sanitary conditions. This study was aimed at looking critically at the dairy factories in the country with a view to design an appropriate, functional and architecturally friendly factory for the production of dairy products with good hygienic surrounding. The scope of this work was however, limited to management of waste generated

from the factory, through the provision of adequate, proper and functional sewage facilities in the factory. The design was based on the production of three (3) dairy products only: - milk, yoghurt and concentrated milk. Data for the design was collected through sites, interviews, case studies, observations etc.

Kehinde, O. A. (2003)

Design Proposal for National Hall of Fame Abuja, Nigeria with Focus on Building Forms and Energy Management

According to the author, the study is based on the premise that Nigeria is faced with corruption problem of epidemic proportion. It was therefore assumed that a hall of fame that idolizes positive contribution to national development will offer an architectural solution to the social problem. A study of three cases was conducted and the result showed a positive influence of such a reward system on national psyche.

Odunlami, S. O. A. (2001)

Design Proposal for Lagos State Waste Paper Recycling Plant, Isolo with Emphasis on Impact of Natural Lighting on Energy Conservation:

This study is concentrated on the impact of day light or natural lighting on the reduction of electrical consumption by the proposed Waste Paper Recycling Plant. In view of that, the work determined the interior light level needed, the amount of natural light provided by the design proposal, the amount of artificial light save, the economic value of the electricity and fuel save, the cost of constructing the proposed design and calculated the life – cycle cost benefit of the proposed design.

Offie, E. A. (2001).

Design Proposal for Sustainable Shelter Researcher Centre, Minna, with Emphasis on use of Intermediate Technology

The researcher identifies the efforts made by the Federal, States and Local Governments to provide housing for the masses of the country. He acknowledges that despite this effort it has not in any way met with the expectations of the people. This according to the author may be due to the excessive cost of building materials. In view of that he has found out that sustainable shelter could be provided through intermediate technology for the benefit of all: the poor and the rich, the urban and rural dwellers.

Okon, V. E. (2003)

Design proposal for Ultra – Modern Fire Service Station Abuja, Nigeria with Emphasis on Fire Safety in Buildings:

The use of fire to man cannot be over – emphasized. However, it could equally be disastrous to him when out of control. The present study is on how to prevent fire outbreak, and in the case of the inevitable, reduce it to the barest minimum in buildings to avoid loss of lives and property. Case studies of fire stations in Nigeria and outside the country were taken, to serve as basis for a functional design. Data was collected from the chosen site which would aid the design of the station. The design show cases, a functional design, to meet the needs of fire fighting demands in the 21st century as well as the requirements for fire safety in buildings. Each space was intricately designed to accommodate its functions. In conclusion, the designer said that the designed facility is not limited to putting out fires alone, but could also be involved in emergency and rescue operations.

Olugunagba, A. (2003)

Design Proposal for Cocoa Processing Industry Idanre Nigeria with Emphasis on Sanitation

The study used descriptive research methodology in which case studies of some existing cocoa processing industries such as those in Oregun, Ile – Oluji and Ebun was carried out in order to get acquainted with the general and physical layout of cocoa industry and the activities that take place in them. The concept of the study centres on the functional flow diagrams that would show the processes or stages the raw cocoa goes through before it gets to its final stage which is the cocoa powder and butter. Three guiding principles led to the design. These include functions, symbolism and educational. The proposed design consist of raw materials store, bean silos, pre – cleaning sections, micronising and winnowed section, the roaster, cocoa butter and cocoa powder sections. The design put into consideration the site planning concept and materials to be used in construction such as those for walls, roofs, flooring and space requirement. The study concluded that the proposed design of the cocoa processing industry Idanre will bring about an industry that will provide an enviable and conducive environment to attract both insider and outsiders to Ondo State

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Department of Urban and Regional Planning

Omotayo, J. O. (2000)

The Impact of Dams – Reservoir on the Environment: A Case Study of Jebba Dam Hydropower Station

The researcher gathered three types of data, namely meteorological, hydrological and soci economic from the study area. With these, he examined critically, the impact of the dam reservoir on the physical biological, social, economic, cultural and aesthetic environments of the area. The result of the study revealed a lot of negative impacts ranging from the alteration of water quantity down stream; increases water related diseases such as malaria, dysentery etc, and alteration to land use and aquaria, and biota habitat in and more importantly, the devastating impact of incessant occurrence of floods downstream and up stream. The macro and micro economic impacts discovered includes jobs creation, industrial and urban physical development which increased per – capital income of the inhabitations of the area. The study provided the ameliorative measures to mitigate the negative impacts.

SCHOOL OF SCIENCE AND SCIENCE EDUCATION

Department of Biochemistry

Musa, A. D. (2003)

Determination of Fungal and Aflatoxin Contamination of Cigarette Tobacco and Toxicity Screening of Crude Extracts of the Fungi in Mice:

Tobacco from 32 commercial brands of cigarettes were analyzed for the presence of fungal and aflotoxin contamination. Thirty of the 32 were found contaminated with up to 17 different types of fungi species producing a total of 115 isolates on culture. A dose of 5mg/kg (body weight) of the secondary metabolites produced were administered unto healthy young male mice weighing about 300 kg through intraperitoneal route and they exhibited varying degree of acute toxicity on the test animals. Some isolates elaborated secondary metabolites induced 100% mortality while others produced 0% lethality on the test animals. Between them, there was a broad spectrum percentage of mortality induced by the test substance. Further test analysis showed that six (6) or 18% of the cigarettes were found to have aflatoxin contamination. These results suggest that cigarettes marketed in Nigeria many also produce mycotoxin – a related toxicity in smokers due to fungal contamination. The study concluded that cigarette is the only legal substance that produces adverse effects when used for its intended purpose. It was therefore recommended among others that smokers should consume less per day, avoid smoking in public places and that programmes aimed at rehabilitating addicts and to encourage others quit the habit should be intensified.

Department of Biological Science

Abdul – Rahaman, A. A. (2002).

Prevalence of Coliforms and Multiple Antibiotic Resistant Escherichia in Day – Care Centres in Minna, Niger State

This study investigated the prevalence of coliforms and other bacteria on environmental surface such as walls, furniture, door handle, toys, floor, utensils and toilet seats of three Day – Care Centres. These are the New Secretariat Day – Care Centre (NDC), Unguwan, -daji Day – care. Centre (UDC) and Government Day – Care Centre (GDC) all in Minna. Coliforms were isolated from 95(13.7%) of 693 samples collected while non – coliform bacteria were isolated from 598 (86.3%) of the environmental samples examined. The result of the findings showed that walls, furniture toys and utensils had high prevalence of both coliform and non – coliform and therefore suggested that these items could act as reservoirs for the organisms. The highest prevalence of non – coliform bacteria in the three centres was recordeded for staphylococcus species followed by Bacillus SPP. The E. coil isolates obtained were subjected to anti-biotic sensitivity tests. The results revealed a varying level of resistance from centre to centre. The organizations were however, sensitive to chloramphenicol and tetracycline with **0.04mg/m/ and** 0.75mg/m/ MIC values respectively. This results therefore suggested that the two drugs could be effective in treating infections caused by E. coil and related bacteria.

Adefolalu, F. Sherifat

Studies on the Nutritional and Toxicological Effects of Local Mineral Salt (Kanwa) in Rabbits

The study was based on the practice of administering the local rock salt (Kanwa) on cattles, horses, sheep, goats and rabbits by the herdsmen in Nigeria. Twelve varieties of such salts were obtained form Minna central market. Analysis showed that they contain some elements of sodium, potassium, calcium, chloride, carbonates, magnesium, cron, manganese, zinc and copper. An estimation of the nutritional and toxicological effects of the salts on rabbits was carried out at three (3) weeks interval for 9 weeks on a group of control rabbits by administering 200 mg/kg, 800mg/kg and 320mg/kg of the salt to three groups of rabbits. The serum electrolyte level, their weight gain and biochemical parameters were evaluated. The results revealed that there were fluctuations in the level for serum electrolytes and serum biochemical parameters in control and treated animals. It was therefore concluded that the salts (Kanwa) contain mineral elements which are required by the animals for growth and enhanced performance. Meanwhile, feeding at lower dosages was discovered to be more beneficial than those above 800 mg/kg which could also be injurious to them. The study recommended that further studies be carried out to determine the effect of longer period of salt consumption, especially to ascertain the nutritional and toxicological effects of local salt on the animals.

Akinsunbo, O. A. (2003)

Screening of Extracts of Some Nigerian Medicinal Plants for Trypanocidal. Activity

Extracts from various parts of Annona Senegalensis plant, stem, bark of Enantia chlorantha and Okoubaka aubrevellei and leaf of calotropis procera and miltracpus scabra were screened for trypanocidal activity in albino mice and white rats infected with Trypanosome brucei. Both the crude and the partially purified forms of aqeous extract of Annona Senegalensis leaf satisfactorily cleared trypanosomes from the systems of experimentally infected animals at a dose of the 200mgkg body weight. The treated animals survived for more than fire months post treatment. It was therefore recommended that oral route of administration of A Senegalensis leaf extract should further be investigated for the treatment of African trypanosomiasis.

Fagbemi, A. O. (1999)

Protein Enrichment of 'Fufu' using Saccharomyces Cerevisiae and Candida Utilize

Fourteen shrains belonging to the henera Candida, sacchanonyces, Hansenula, Rhotorula, pichia and kleockera were isolated from burokuto and screened for potentials utilize cassava as a carbon source. All the 14 isolates were able to utilizing the carbon source at varying degrees. Based on the screening test result and other realities (protein and fat contents) of the isolates, Candida utilize (BKT4) and saccharomces cerevisiac (BKT7) were selected for the enrichment of cassava slurry (Carbohydrate 34.5%, protein 0.4%, fermentation, changes in microbiological and

biochemical characteristics were observed. The total viable counts increased with increasing fermentation time while the counts of lactic and fungi increased at the later stages of the fermentation due to the acidity of the medium counti of staphylococcus and cloiforms also varied with time of fermentation. The results of this study suggest that fufu be made more nutritious with saccharamyces cerecisiue and Candida utilize.

Okhawere, M. C.(2003)

Bacteriological and Chemical Analysis of Source of Potable Water in Niger State:

The bacteriological and chemical analyses of drinkable water source in Niger state were investigated for five (5) months. Three (3) water sources e.g. well, stream and pipe – borne water (tap) were sampled from randomly selected fourteen (14) Local Government Areas in the state. Multiple – tube method and Atomic Absorption (AA) spectrophotometer were used in the examination of water samples for faucal pollutants and the presence and levels of certain chemicals such as Nitrate, phosphate, Sulphide, chloride and their ionic concentration (Ph). The microbial loads decreased during the dry season and increased during the raining season. The statistical analysis revealed significant differences pair wire across the board. The chemical analysis revealed slight increase with increases in rains. However, those chemicals are within the tolerable limits recommend by World Health Organisation (WHO). The results obtained implied that most of the stream and well waters samples and a few of the tap water samples were not portable. The research recommended among others that rural communities should be provided with basic health education and sinking of more boreholes to meet with increasing demands for safe water.

Tijjani, M. (2003)

The Effects of Pregnancy on Serum Concentrations of Total Protein Albumin, Urea, Creatinine, Sodium, Ion and Potassium: A Case Study of Niger State

The study investigated the effects of certain physiological disturbances in pregnant women. The instrument used were blood samples taken from 96 pregnant women, 42 non – pregnant women and 25 menopausal women from Minna, Suleja, Bida and Kontagora area of Niger State. These sample were analyzed for serum total protein, albumin, urea, certainties, sodium ion and potassium ion.The results showed that the blood serum concentrations of all the biochemical parameters used were lowered during pregnancy and elmented menopothel women compared to non – pregnant women value.The findings also form a baseline to distinguish between mutarual phonological changes and path physiology in pregnancy.

Department of Chemistry

Lafia – Araga, A. R. (2003).

Separation and Determination of Sulphate, Carbonates and Chloride in Laka Salt by Ion – Exchange Chromatography and Conductometry

Eight (8) samples of lake salt were obtained from Minna market and analysed for carbonate, sulphate and chloride. After series of experiments on the samples it was discovered that they contained carbonate, sulfate and chloride in varying quantities. It was also found out that the ion exchanged chromatographic method of analysis is ideal for separating the ions. However, it was advised that a detector be attached to the corductometer to enable correct assessment of the response of the instrument while yet, the detector must be computerized so that the peaks are given automatically as the samples are being eluted. It was recommend that further research be conducted with the ion exchanged chromatographic methods as samples containing various types of ions that can be successfully separated and determined.

Salihu, S. O. (2003)

Determination of Metals in Dried Fish: A Case Study of Some Traditionally and Laboratory Oven – Dried Samples

Five species of fish including S.galilaeus, Cyprians C. gariepinus, sardinella spp and Labeo spp were analysed for their contents of sodium, lithium, calcium, magnesium and potassium. Other elements include inched iron, zinc, manganese, copper and lead. Both traditionally dried and fresh samples of fish were bought from markets in Minna and then

latter dried in the laboratory oven. The result of the analysis of the five species showed that the amount of the elements determined varies considerably among the samples as they contained higher concentration of the elements compared to the laboratory oven – dried ones, exceptions being potassium and lead in sardinella spp, iron and lead in S. galilacus, magnesium and lead in C. gariepinus and Cyprinus carpia respectively. In order to arrest the contamination of fish, the research recommended among others that a detailed investigation of fish habitat i.e. water, be carried out to determine its level of contribution.

Department of Geography

Abbas, I. I. (2001)

Environmental Impact Assessment of Lower Niger River (Forcados River Segment) Dredging on South Western Niger Delta Using Remote Sensing and Geographic Information System (GIS) Techniques

This research is aimed at assessing and predicting the likely environmental impacts of the proposed dredging of the Lower Niger River around the Lower segment of the Forcados River on the South – Western Flank of the Delta. Remote sensing and Geographic Information System (GIS) techniques were used. The research found out that benefits such as growth of towns, economic and industrial projects will be enhanced. Alternative route with minimal impact was suggested and alternative projects in the contribution of access roads were also suggested.

Abdullahi, A. M. (1999).

Rainfall Variability and Crop Yield. A Case Study of Kontagora Farming Community

The research attempts to establish the relationship between variability in rainfall and crops yield in Kontagora farming community with the aim of ameliorating the effect of flood and drought in the area. The research determines the extent to which different variable rainfall years have affected crops yield of the peasant farmers in the study area. The data and analysis of the research was collected from the Niger State Agricultural Development Project, Kontagora.The work established that

variability in rainfall became more consistent after the 1982/1983 drought years and that 1983 and 1993 have adversely affected the yield in crops through late planting, forced harvesting and crop failures.

The work also found out that effects of crop yield include, migration, increase in the rate of theft, and changes in occupation. The following suggestions were therefore made: that resettlement schemes, dam construction, Disaster Relief, Committee and more agricultural loans schemes be made available to help in coping with the effect of drought the federal state government should also embark on massive sinking of bore holes etc.

Abdullahi, M. I. (2001)

Rainfall Variation and Groundnut Production in Niger State: A Case Study of Wushishi Local Government Area

This study was carried out as a result of the fact that despite huge sums of money spent on ingredients such as fertilizer, tractors (planters, harvesters and sprayers) and imported high – yielding grain hybrids, the problem of low productivity still lingers on. This is because the real issue of geo – environmental constraints has not been addressed. The study therefore focuses on the rainfall variation and its effect on the fluctuation in the yield of groundnut in the study area. In view of that, climatic data was collected from fire station within the L.G.A for a period of 11 years (1989 – 1999). The data was subjected to various agro-climatological and statistical analysis including the computation of the mean, standard deviation, deviations from the mean and climatic indices. These were related to agricultural variable of groundnut yield. A model was then developed on the basis of yield of groundnut and weather data of an experiment which was applied in order to predict groundnut yield. The result showed that variability in

rainfall causes fluctuation in groundnut production in addition to other non – climatic factors. It was concluded that though the study did not exhaust all the agro- climate elements influencing the crop yield, it has highlighted the effect of rainfall as major climatic parameters controlling its production. It was recommended among others that more meteorological network need to be established while existing ones should be reactivated to foster better meteorological data recordings and keeping.

Adama, S. S. (2002).

The application of Remote Sensing in Assessing Soil Erosion in Ankpa LGA, Kogi State

This study was prompted to check the increasing effort of erosion on agricultural productivity since it has the capacity to reduce the fertility and cultivability of the soil. Erosion like desertification, flood and drought was identified to require proactive rather than reactive approach management. The problem of soil erosion has been identified as a major impediment to development efforts in the study area. Attempt has therefore been made to assess soil erosion using remote approach in Ankpa area of Kogi State. The changes in land use and vegetation in the study area has been attributed to increase in the pressure on land. The extent of erosion was established by tracing from the photographs and comparing with the SPOT (xs) imageries. The traced overlays from 1978 and 1995 were compared with each other. For example, percentage coverage of erosion land in 1978 was 15.23% while in 1995; it was 31.0% showing a 100% increase. The forest area also reduced from 8.6% in 1978 to 1.4% in 1996 which is explained by the increase in the pressure of agricultural land. It was

recommended that curative measures be adopted to reduce or eradicate erosion totally.

Adeboye, A. A. (2001)

Potential Problems of Erosion at Lower Usuma Dam, Abuja, Nigeria

This study is an assessment of vegetation, soil and land cover factors in the identification of the erosion susceptible area of the Lower Usman Dam, Abuja.Pre – dam aerial photos, and SPOT HRV Multi – spectral image of 1995 was used. The results show that the highest potential was quite small in size. The areas covered with shrubs were very high, the areas made up of bare rock crops, built – up areas and the reservoir was moderate and the least susceptible.

Ahmadu, Z. (2001)

Rainfall Variation and Yam Production in Shiroro Local Government Area of Niger State

The study is on the effects of rainfall variation on yam growth in the stated LGA. The study examined the rainfall variation period of about ten years (1991 – 2000) .The result of the research showed that variability in rainfall causes fluctuation in yam production, and that non climatic factors also affect yam production.

Akanji, I. N. (2001).

Assessing Spatial Urban Growth of Part of Jos Metropolis using Remote Sensing Techniques

The study was carried out to determine the level of development in Jos metropolis with a view of propounding solutions to the problem of urban slum that is in the area. To carry out the study, aerial photographs of 1956 at a nominal scale of 1:22,000 and photographs of 1962 and 1971 at a scale of 1:10,000 were used to assess the rate of development over the period. The photographs were interpreted visually and land use classification was based on the modified USGS classification scheme. A total of 303.85 hectares of land were mapped. The result of the study shows that, the building area has increased by 31.57% between 1956 and 1962, while open space has reduced by 50%. It was found out that between 1962 and 1971, the built up area has increased by 44.93% which represents 57.10 hectares of the total land under study. The study therefore suggested some improvement and monitoring as solution to excessive urban growth. The study also recommended that remote sensing techniques be emplored in environmental management.

Audu, B. E. (2001).

The Hydrological Consequences of Urbanization on Nigeria: A Case Study of Lokoja, Kogi State, Nigeria

This study is undertaken as a result of the fact that urbanization in Nigeria is given too much of structural and engineering consideration with little or no hydrological consequences assessment which is normally catastrophic and require huge amount of money to control when it crops in. A questionnaire was designed for the civil servants and students in five selected

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locations in Lokoja to gather desired data. The data requested was on the causes, effects and measures already taken by the government to combat flood in the area. Oral interview and personal investigations were also used in data gathering. Tables, percentages, plates, maps, and graphs were employed in analyzing data collected. The findings revealed that flood is the major environmental hazard experienced in the town caused by rainfall between July and October. Other causes include vegetal removal, poor waste disposal method, slope of lands, inadequate drainage system and population expansion. Both Lokoja LGA and Kogi State government have constructed a few gutters and drainages. Meanwhile, flood has caused untold harms such as death of people and animals, collapse of structures etc. To combat urban floods, curricular and non – curricular approaches were suggested.

Banuso, A. (2002).

Greenness map of Borgu Sector of Kaninji Lake National Park using Remote Sensing and Global Positioning System (G.P.S) Technologies

The primary goal of this study was to demonstrate the use of remote sensing in identification and delineation of spatial extent of vegetation cover. Landsat 7ETM was used to produce the resultant greenness map to form the basis of a critical assessment of the impact of burning activities, conservation technologies adopted by the Management and its effect on the biodiversity of the ecosystem of the park. The results obtained were used to produce a greenness map of the study for April 2000 to be used to monitor, among others, the conservation techniques adopted by Management. The researcher recommended that management of the Park needs to monitor and protect the park burning which is an agent in the process of deforestation, among others.

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Christiana L. Y. (2001)

Flood Frequency Analysis of the River Niger at Jebba

The research was carried out to determine the cumulative frequency of flooding along the River Niger. The parameters used in the study are mean monthly inflow discharge and gauge height. The result reveals that gauge height peaks do not necessarily show a correlation with maximum event floods.

Deve, D. O. (2002)

Relationship between Seasonal Rainfall Over Nigeria North of Latitude 10° N and Sea Surface Temperature

The study was undertaken to investigate the wide variation of rainfall over the area of study. It was discovered that the annual rainfall ranged form 236.7mm to 1537.5mn and that it progressively decreased from South to the North. The general rainfall pattern over the area is abnormal but there are occasions when the stations exhibited double rainfall peaks. The rainfall over the study area is not homogenious because the stations have different terrains. It was therefore concluded that a single predictive model may not be feasible for all the stations studied. The study therefore recommended that other predictors like pressure, temperature and upper air data where available should be used to forecast the seasonal rainfall.

Ejioye E. A. (2001)

Remote Sensing as a Tool for Assessing Rates of Deforestation in Olokemeji Forest Reserve in Ogun State

The study assessed the rate at which the natural forest has undergone changes over time, determined the causes and consequences of deforestation and suggested ways by which this trend can be checked.

The instruments used for the study are aerial photograph of 1951 and 1976 which were visually interpreted. A pragmatic classification scheme with remotely sensed data was also employed for the aerial photographs. Area cover by each land use/land cover types identified were calculated in hectares and statistically analysed by means of simple percentage.

The analysis revealed that between 1951 and 1976 about 2097ha. 015.68% of the forestland has been converted out of which plantations of exotic tree species accounted for 80.21%, ground two things only about 650 ha or 4. 86% of the total forests are under natural cover and the rate of deforestation is estimated to be about 395.64ha / year.

Enete, I. C. (1999).

Impact of Dust Haze on Aviation Operations in Nigeria

Air freight operations span the global, often the food we eat, the cloths we wear, and the machinery we use have been flown in a across the continent or within. Businesses rely heavily on services by plane to conduct daily transactions. Aviation has also generated profound social changes. But in Nigeria air space, these rapid technological advances have been limited by harmattan dust haze during winter periods. Dust haze pose

serious threat to aviation operations. It is composed of soil particles by dust storm from arid/semi arid areas of (Northern Nigeria). Prediction of dust haze is not yet advanced in Nigeria to provide people with reliable information to avert the devastating consequences. The aim of this research is therefore to assess the impact of harmattan dust haze on aviation operations. The instrument used include the pattern of dust haze occurrence, its intensity through visibility values, number of air crashes and air craft movements in relation to harmattan dust haze. These were used to analyze the impact of dust haze on aviation operations in Nigeria.

Results indicate a great variability in pattern of dust haze occurrence. Northern Nigeria is more volnerable to haze occurrences. Dust haze was found to occur mostly in the afternoon hours in the South; occurs in morning and evening in the middle belt while it can occur any time in Northern Nigeria.

Folorunsho O. I. (2000).

Transitionalty of Abuja Vegetation: Remote Sensing Approach

The study was carried out to determine the factors that are responsible for the changes in the natural vegetation in Abuja areas. Two remote sensor data were applied to the vegetation from 1976 – 1994 namely the land sat (MSS) and the SPOT). The vegetation was classified into four types; the woodland, mixed woodland, Montane forest and Riparian. The location of each of the vegetation was compared by using simple geometrical figures. The technique was applied to outline and measure the rate of these changes and causes. The result showed that many factors attributed to de – vegetal cover among which were farming, grazing animal, road

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constructions, fuel wood and expansion of resettlement and settlement.

Hassan, S. M. (1996)

Precipitation Periodicity Index in Kaduna State of Nigeria

This study sought to identify areas of precipitation variability and the magnitude of its variations using the Precipitation Periodicity Index. (PPI). The study's was based on the monthly highest, lowest and the total annual rainfall in percentages. The result of the study revealed that agricultural land use practice could be divided into three zones – including the South eastern part of the state found to be the zone of uniform rainfall; the Western, Central and North Western parts of slight periodicity and the extreme North and North West which were zones of excessive periodicity. The implication of this finding is that various types of crops could be cultivated in the South Eastern parts of the state while yet; agricultural land use practice and animal husbandry could be effectively carried out in the study area because the onset, cessation and LRS were at tolerance level. The study concluded that an understanding of the basic principles of precipitation characteristics is essential for a sustainable agricultural practice since the land is patched by drought at one time and ravished by floods at the other. It was recommended, among others that since more than half of the state is under moisture deficit, it is very important for the state to embark on various irrigation schemes in order to be self sustained through agricultural activities.

Ibrahim, B. B. (2001)

The Use of Remotely Sensed Data in Assessing Land Degradation: A Case Study of Minna and Environs

This study was carried out in response to the fact that Minna and its environs have undergone a change in land use pattern due to increased farming activities. Attempt was also made to establish some form of relationship between the land use and land degradation and to determine the efficiency of land wood sat and spot imageries in determining land degradation. The study therefore used LANDSAT TM imagery of 1983 and SPOT XS imagery of 1993 as major source of data while the topographical map of the study area was used as secondary source of data collection. During ground – truthing land use gullies were identified, measured and analysed. The research work was based on computer interpretation of the imageries using ARCH/INFOR, ARCHVIEW and ERDAS soft wares. Analysis of the imageries did not reveal gully as form of degradation because of their resolutions. However, the movement of the seat of the Federal Government to Abuja has caused population pressure on Minna and environs, thus resulting to continued agricultural activity to meet with the increasing population and subsequently causing erosion. It was recommended that high resolution imageries are the best for use, in the study of land use cover /land degradation.

Ijebor, K. E. (2001)

The Use of Remote Sensing Techniques to Determine Intra Urban Transportation Pattern in Abuja, Nigeria

The research essentially focused on the variable that attracts high traffic flow within Abuja city. In determining this, remote

sensing techniques were employed. Data used include 1979 Aerial photograph and land use plan among others to detect the road connectivity. The statistical data analysis used was the Analysis Variance (ANOVA). The analysis of data revealed that several land use activities on a particular network location was impetus for heavy traffic flow. This is in addition to lack of adequate parking space road mismanagement by drivers and street trading among other factors that cause the changing pattern of transportation in Abuja city. It was also found out that myriad of negative variables affects the city life. These include congestion, insecurity, environmental degradation, and pollution etc. The research concluded that the changing pattern of intra urban traffic flow in Abuja is a functional relationship between other land use activities and can be determined using remote sensing technique. It was recommended among others that there should be office decentralization to reduce centre - oriented movement.

Ikusemoran, M. (2000).

Application of remote sensing to flood Detection and Surveillance. A Case Study of Kainji, New Bussa, Niger State

The central focus of this research is the application of remote sensing technology in the management of flood and its detection in Dams. Specifically the research was carried out using the Kainji dam. The data used were aerial photographs that were taken in 1959 and 1977. These were used to study the land use and land cover changes between the period. The land use/ land cover changes of the kanji dam area for about twenty years (1973 – 1995) were also studied using a land sat MSS image of 1976/1978 and a SPOT XS multi temporal image of 1993/1995. The annual rainfall and average annual rainfall were also used to calculate the flow index (k) using the relation

KM = QM/Q. A simple visual interpretation method by dot grid was used to determine the land use / land cover changes in the area. Complete square method were also used to calculate each area in the land use/ land cover area.The research revealed that both human and natural factors was responsible for the flood occurrences in that lake. Man's activities responsible for flood include, farming, animal grazing deforestation and settlement. Natural covers includes; too much rainfall etc. A ten year flood cycle was also revealed in rainfall of the 9th year of every decade with intermittent ones around the fourth of every decade. While ten draught cycle falls between the second and third year of each decade falls between the second and third year of each decade. The study also revealed an increase in the kainji dam due to the above activities.

Iwuji M. C. (2001).

An Appraisal of Vegetation Degradation in Akamkpa, Cross River State, Using Remotely Sensed Data

The study is on the impact of agricultural practice of the people of Akamkpa L. G. A on the degradation of vegetal resources in Akamkpa. Remote sensing technique was applied using aerial photographs covering the study area for two separate years. Six different land/vegetation classes were identified and their area duly delineated and calculated to reflect the variations. The result showed that there has been remarkable down ward change in vegetables status of the study area.

Jande, J. A. (2001).

Using Normalized Difference Vegetation Index (NDV) Form Landsat MSS and Spot XS to Detect Vegetation Destruction in Makurdi Area and its Environs, Benue State

The study was undertaken to assess the magnitude and rate of vegetation destruction in the study area using NDVI as remote sensing tool. While landsat MSS and SPOT XS images of 1976 and 1993 were used as major source of data, topographic maps, vegetation and land use maps were also used as ancillary data sources. Analyisis of data revealed that between 1976 and 1993, 492168.94 ha of land with vegetative cover was destroyed while 2898.17ha of vegetated land were being destroyed every year. Agricultural land and settlement increased to the tune of 59111.99 ha and 3213.46 ha respectively with an annual increase of 3477.18ha and 1`89.03ha respectively. It was concluded that the force accounting for these changes were anthropogenic in nature. It was therefore, recommended that agro forestry practices, large scale of forestation, improved intensive farming and alternative sources of energy be introduced and well implemented.

Jimoh, S. A L. (2001).

Assessment of Vegetation in The Federal Capital City, Abuja With Remotely Sensed Data (1982 – 1994) :A Case Study of Phase I

The research assessed the impact of the frightening threats of speedy urbanization and increasing population pressure on the natural vegetation cover of the Federal Capital City, Abuja. Aerial photographs of 1982 and 1984 and SPOT image of 1994 of the F.C.C phase I were used. Visual interpretation analysis was used to determine areas or urban fringes that had

experirenced natural vegetal decline and were mapped by over load transparency in a fair and neat drawing. The vegetal reductions were determined with respect to two successive images. In all, a total reduction of $36.7m^2$ of natural vegetal covered representing 67.34% declined as at the 1994 image. Some suggestions to guide further destruction of the natural vegetal cover were given by the study.

Mansur, B. M.(2002)

Micro – Climatic Impact of the Tiga Dam on Locations Upstream in Kano State

The research was conducted to find out the impact of Tiga Dam on he Local Micro – climate at the up stream location. Meteorological data for pre – dam (1963 – 1973) and the Post – dam (1990 – 2000) were analysed using mean, spearman's rank correlation and students test. The result of the study reveals that there is 1^0c decrease in the post dam annual mean temperatures, while evapotranspiration increase is 2556mm/annum (26.4%). It also reveals relative humidity records and increase of 18.8% from monthly average of 49.5% to 61%. also rainfall amount around the reservoir increases to 931.2 mm/annum against 884.4 mm/ annum (5.1%). In all the four variables, ri-values approaches a perfect correlation and the t – test shows a significant relationship at both 1% and 5% level. This shows that micro – climate change has not yet reached a critical stage but it is allowed to remain like this as the environmental quality Socio – economic activities of the people located, around this area and the water management of the reservoir will be adversely affected. An effective discharge technique was recommended for the operation of the Tiga dam reservoir.

Mhusaya, K. C.(2002)

The Application of ERS -SAR to Land Degradation Studies in the Borgu National Park

The Kaniji Lake national park (KLNP) is supposed to be a wilderness protecting the ecological integrity of the ecosystem However, there are both natural and anthropogenic factors which have led to land degradation. These, according to the researcher include agriculture, overgrazing, fuel wood collection, deforestation, water erosion and the activities of the Park games, The author discovered that it is only the use of ERS – SAR that can efficiently and effectively acquire data of degraded areas and mapping such areas of environmental disasters in general. It was recommended that to abate the problems of remote sensing applications, drastic measures should be taken to raise adequate man power in remote sensing through training, and introduction of remote sensing in all institutions of higher learning, among others.

Mohammed, A. (2000).

Application of Remote Sensing Techniques (Aerial photograph) to the Estimation of Buildings in (Soje Ward) of Minna, Niger State

The research is an investigation on the use of Remote Sensing techniques in the estimation of buildings in Soje Ward, Minna, Niger State. The researcher used the data from the aerial photograph of Minna taken in sheet (82562 – 20 and 82562 – 22) and field work of 1998 for the study. Mirror stareospairs was used for visual photo – interpretation.

The findings reveal that 85 buildings were rented residential buildings while 27 buildings were observed as residential

family compounds, 6 were observed as religious buildings, and 3 were identified as institution's buildings. The field work showed that out of 1998 buildings observed, 390 completed were identified while 67 were uncompleted or buildings under constructions. From the 390 completed buildings, 90 were completed traditional buildings, 247 were completed modern buildings. The conclusion of this study is that aerial photographs of 1:5,000 can be used with a high degree of accuracy to estimate the number of dueling houses in Minna.

Moses, N. (1998).

Application of Remote Sensing Techniques in Monitoring Land use and Land Cover Changes: A Case Study of Wuse District, (Abuja F.C.C).

This study was carried out to overcome problems of haphazard, uncontrollable development and deteriorating environmental quality of an Abuja which was associated with Lagos, the former Federal Capital. The procedures employed in carrying out the research included data input, sources of data, classification scheme, creation of a base map, minimum mapping unit, data interpretation, ground truthing, data transfer and data analysis. The result of the study showed that remarkable growth and development took place within the study period. However, it was revealed that the changes in land use/land cover of the study area did not conform with the laid out master plan of the area. There was massive deviation in the implementation of the master plan. It was concluded that monitoring changes in land use/ land cover in the new Federal Capital of Nigeria is very important for planning and administration. The research therefore recommended, among others that it's necessary to have complex models where evaluation of land use policies can be fully tested.

Mohammed, A. E (1998).

Influence of Rainfall on Rice Production in Katcha and its Environs

The aim of this research is to determine the extent to which amount of rainfall has contributed to rice production by farmers in the study area. The data required was mostly gathered from Agricultural Development Project (ADP), Bida. The results of the data gathered revealed that since the drought of 1973 and 1983 in the area, the annual rainfall had been fluctuating. In addition to that, there has been a decline of yields which is as a result of uncertainty on the part of the farmers either planting earlier than the normal time or delay planting until rains are over. Meanwhile, majority of the farmers were found to be responding to the drought or flood situations using new techniques of production such as the cultivation of early maturing crops and dry season irrigation farming. It was therefore recommended that the government should assist the farmers with needed capital to enable them cope with modern techniques of farming such as use of tractors, chemicals, and improved seeds variety. This is in addition to elimination of middlemen between farmers and government in the distribution of agricultural input among others.

Musa, D. (2000)

An Analysis of Land Use Change in Yola, Adamawa State – using Remote Sensing Techniques

The research was carried out to determine the level of urban development in Yola using remote sensing techniques. The main focus is to detect and analysis the landuse change between 1974 and 1982. Photographs of 1974 and 1982 at a

nominal scale of 1:3,000 and 1:7,000 respectively were used to detect the changes within the study area. The instrument for this study also includes land use maps of the study area purchased by interpreting the aerial photographs and classifying them based on the modified USGS Land use classification scheme. A total of 206 Hectare of land were mapped. The results show that 44 hectares (representing 21.4% of the total area covered) had changed between 1974 and 1982. A magnitude of about 7 hectare of land is recorded as a decrease in agricultural land. Similarly, shrub land, let land and water body recorded a loss of 4 hectares, 5 hectares and 2 hectares respectively, representing 9.09%, 11.4% and 4.52% of the study area. Built –up area and transportation network recoded gains of 12 hectares and 10 hectares respectively representing 27.3% and 22.7% of the total land use changes recorded. The summary of the finding of this research is that remote sensing techniques can be used for both rapid and repetitive surveys for monitoring and assessing the environmental impact of development and in monitoring the dynamic use of land.

Obatin, O. J. (2001)

Effects of Rainfall on Crop Performance in Niger State. (A Case Study of Rice Production in Katcha L.G.A.

The study investigated the effects of rainfall on rice yield in Katcha Local Government Area. The study used rainfall records for a stipulated period of ten years. Regression analaysis was used and the findings should that deviation from the mean and climate index were closely related to rice yield.

Ogbeche, O. A.(2000).

The Application of Aerial Photography to Urban Road Development in Calabar Municipality

The study is on urban road development, network structure and condition in Calablar Municipal with an aim to verify the application of remote sensing techniques in urban road development using aerial photographs. The research also studied the provision of road traffic facilities and feeder roads in the course of urban road development, including network structure and condition. The graph theory was employed to analyze the road plan efficiency. Manual measurements and observations were under taken on the roads within the town in order to identify their features. Condition, and extent. The findings are that remotely sensed data can be applied to urban road development in data collection and proper analysis, that proper urban road development could be relieved if there is adequate and up to date data collection on road development such as the use of remotely served data in planning and policy formulation.

Ogirima, S. Y.

Analaysis of Transport Route Development in Abuja F.C.T using Multi – Temporal Remote Sensing Techniques

This study seeks to analyze the development of transport route in Abuja by means of multi temporal remote sensing data. Aerial photographs of 1982 and 1988 and satelite image of 1996 were used for the analysis. Laboratory analysis was carried out from National remote sensing centre at Jos to compliment visual interpretation carried out with the aid of 15X magnification. A combination of these steps generated the

Abuja road maps for the period under review. The roads were classified according to the classification in the Master Plan document and analyzed. It was discovered that local street development was the highest while the express ways have not witnessed much changes. This is due to the demand level for them and the attendant heavy investment it may require. Road accessibility within the F.C.T is very good but there are residential development in adjacent land areas where road construction has not taken place. The study found out that if these houses are not coordinated, it may result into social and political crises in the future when demolition must be carried out to give way to planned roads.

Ohadugha, C. B. (2002)

Application of Remote Sensing in Population Estimation: A Case Study of Coal Camp Ogbete Enugu North Local Government Area, Enugu State

Accurate population statistics is an important factor for economic development, planning and form the basis of distribution of social amenities in a particular settlement, among other uses. Traditionally, census figures are derived from headcount conducted, possibly every ten years. However, this target is hardly met especially in developing countries because the exercise among other things is very expensive Population estimation from remote sensing is said to offer a quick and inexpensive method of gathering up – to – date population statistics. Therefore, of the three known methods of population estimation from remote sensing data, dwelling units count was adopted for this study. The number of dwelling units was obtained Form aerial photograph which was updated by terrestrial photographs and a more recent cadastral map of the area. Resident density was obtained from census statistics and questionnaire. Population estimation was then done by

multiplying the total number of dwelling units by the resident density. It was discovered that the accuracy of the estimation depends upon the skill and experience of photo interpreter. Meanwhile, population estimation using remote sensing technique of aerial photography proved to be accurate, up – to – date, timely and therefore, recommended future use.

Ojoye, S. (2000).

Weather and its Influence on Maize Production in Niger State

The study is an investigation of the effects of climatic and hydrologic factors on agricultural production in Niger State of Nigeria. Its main focus is to investigate the agrometerorological factors of maize production in the state. The two sets of data used for the study are Agrometerorological elements influencing maize production and data on maize yield which were subjected to Agrometerorological and statistical analysis. The study reveals that out of 9 observed and derived parameters, onset fates of rains, climatic index, dry spell, length of rainy season, rainfall amount in May and June have significant relationship with maize yield. Simple regression also reveals that precipitation indices accounted for 68.5% of the variation in the yield of maize in the state. The researcher therefore made the following recommendations: planting period of maize in the state should be done at the onset of the raining session which is between $13^{th} - 15^{th}$ April, the farmers need to introduce some farming practices so as to minimize the negative effect of weather, such as the introduction of early maturing spares; irritation practices should be carried out in extremely dry areas, among others.

Okediji K. A. (2000)

Comparative Study of Land Surveying and Remote Sensing as Methods for Large Scale Land Cover Mapping

The research is an assessment of the accuracy, speed, cost and the dependability of Land Surveying and remote sensing methods as means for large land cover mapping.The instruments used for the study include aerial photograph of 1982, topographical map of 1998, professional scale of fees for surveyor 1998 and field observations. Pythagoras theorem, percentage of error determination and statistical analysis were used to analyze the data. The result of the analysis showed that land surveying is more accurate, dependable and cost effective than the remote sensing method for large scale cover mapping.

Olayanwa C. O. (1999)

Application of Aerial Photography and Satellite Image Interpretation Technologies to Monitoring the Expansion of Ibadan Municipal from 1972 – 1993

Urban planners and city managers had attributed the failure of planning efforts to solve the problem of congestion, flooding and slums in Ibadan to lack of adequate information on the growth of the city for any meaningful planning. The study explores the possibility of using image interpretation techniques to determine the growth 1972 and 1993. 1972 and 1993 land cover maps were produced by interpreting area photographs and satellite image respectively. The maps were matched on a sharp photocopies original document plate form, after which they were photocopied. The 1972 estimate of area of each categories of land cover revealed that urban built – up land cover, vegetation and water occupied 53. 26km, 107. 08km^2 and 1.32km^2 respectively, while the percentage of the

area of each land covers to the total area of the city were 32.95, 62.25 and 0.82 percents respectively. 1993 estimate of the area occupied by urban built – up vegetation and water category were 118.82 km^2, 14.52km^2 and 1.32km^2 respectively while the percentage of the area of each land cover to the total area of the city were 73.56, 56, 25, 62 and 0.82 percentages respectively. This means that in 1993, urban built – up land cover had increased by 65.66km^2 while the vegetated cover had decreased by the same area of 65.66km^2 since expansion of urban built – up land cover was over the vegetation. The growth rate of urban built-up cover in a period of 21years was 123.26 percent in the area pattern of Ibadan was irregular. It was discovered that image interpretation technique might prove to be a reliable method of obtaining information on urban growth.

Oluwole M. S. (2000).

Development Detection Analysis on the physical Development of Abuja (F.C.C) Using Remotely Sensed Data

The study was carried out to investigate the problems associated with environmental changes in Abuja using a change detector analysis with a view to providing an audit of environmental quality maintenance and renewable resources sustainability. An integrated remotely sensed data has been used to analyze change in the physical development of Abuja using a two time epoch data (1982 and 1996). The land use/ land cover classes were generated and the aerial extent of each land use/ land cover classes were calculated using the modules in ILWIS 2.2 The study found out that areas which were mostly non – urban in 1982 were given out to urban development in 1996 – specifically on average of 202.59

hectares of Land were urbanized yearly. It was found out that the physical structure of the environment has changed due to environmental depletion. The study also made some recommendations towards the management of the environment.

Omotayo, J. O. (2002).

Assessment of Resource Potentials of part of Ero – Catchments Basin in Ekiti State using Satellite Imagery

The study is an assessment of the resource potentials of Ero – Catchments basin with the use of satellite imagery with a view of extracting useful information from satellite imagery SPOT Xs 2 as an earth resources inventory/ assement tool. Remote sensing and computer aided method of analysis were used for the study. The study found out that the use of SPOT xs satellite imagery data products makes detection of environmental features and their interpretation easier. The study also identified existing land use such as existing settlement, cultivated land, fallow land, water body (Reservoir), oil palm plantation,, fishing camp, previous stones and river channels/wooded land. The study further found out that the Ero catchments Basin has potentials for agriculture development such as large scale production of popcorn, sugarcane, cassava and oil palm, development of fish farming, tourism, development, establishment of starch factory, provision of portable water for over 62 towns and villages and the possibility of converting Ero Dams to hydropower dam through inter basin transfer to check the problem of power outages in the catchments areas. The study proposed one hectare of farm land for would be potential fish farmers in the area studied.

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Owolabi ,T. (2001)

Application of Remotely Sensed Data in Detecting the Extent and Rate of Deforestation. A Case Study of Apapa, Lagos State

The study utilizes sequential aerial photographs of Apapa taken in 1951, 1965, 1976 and 1988 to assess the extent of deforestation and its dynamics in Apapa, Lagos State. The photographs were visually/ manually interpreted with the aid of a mirror stereoscope. The land use categories were delineated onto transparencies at scale of 1:25,000. Each of the land use maps produced were over laid so as to visually observe the pattern of change in forest cover area within the study area. An area of 21 25 ha was mapped for 1951 and 1965, and 2362. 5 ha was mapped for 1976 and 1988.The result obtained showed that the vast area of forest in 1951 (996.88ha) had been virtually converted to other uses by 1976. The studies also found out that residential and industrial expansion were the major causes of deforestation in the study area. Some others cause and adverse effects of deforestation were also highlighted and strategies to curb the situation were suggested by the study.

Razak, K. Y. (2001).

Monitoring Urban Growth Using Arial Photographs: Kaduna as a Case Study

The Research is aimed at acquiring basic land – use data for monitoring urban growth in Kaduna State. The researcher used sequential black and white aerial photographs for 1962, 1977 and 1991 respectively. The magnitude/area of the delineated boundary of each land – use type was calculated using the compensating plan meter. The result indicated that there was a

linear positive relationship between urban growths with time. This result also suggest that remote sensing techniques especially sequential aerial photographs can be used for the acquisition of basic urban land – use data for the study of urban growth necessary for the planning and management of urban areas in Nigeria.

Salihu, S. (2003).

Mapping of Potentially Floodable Areas of Minna Environs in Niger State using remotely – Sensed Data

This study is aimed at determining those areas on the outskirts of Minna city that would, in the future, become susceptible to flooding. The assumption was that since the built – up core region of the city is being continuously paved, runoff in the main drainage channels on the outskirts is ban to increase, arising from reduced infiltration up stream which may lead to severe problem of flooding and other forms of ecological problems in areas banking these drainage channels. Remotely – sensed satellite data of the study area was used to infer the most immediate areas that could be affected by future flooding. While SPOT 3 multispectral data was used to determine areas of thick vegetation and flood plains that reflect highly in the Near – infrared band, the Normalized Deference Vegetation Index (NDVI) was used in the analysis to single out those areas of thick, healthy green vegetation. Finally, surface data was produced in which the analyzed satellite image was droped on to have a perspective view. The study, among others recommended that the authorities concerned should take necessary steps to prevent the impending disaster by the extension of the critical drainage channels to reach the reserved areas.

Samaila – Ija, H. A. (2001)

Monitoring the Growth and Development of Abuja City (Phase D and Bwari Area Council using Remote Sensing Techniques

The study probed into the use of terrestrial photo geography by the use of a hobby camera and capturing the Abuja city – Phase 1 from high stations on hills and tall buildings. The photographs of the city were used to update the map derived from spot imagery of 1992. Those of the satellite towns demonstrated possibility of monitoring housing development. Photos of Bwari town were taken at 3 dates within four months and developments were clearly monitored. In the determination of errors in the published images, after mapping and graphically illustrating their presence on derived maps of road development, measurements were made on the hard copies of the remotely sensed data and compared with ground survey. The instruments used were analogue planimeter and opisometer in comparism with hp c 200 digital camera and Auto CAD map R3 were used for the measurements.

It was discovered that the digital technique is a lot better where the analogue would have failed to measure the errors appropriately. The errors were found to be positive and ranged from 1% and 34% respectively it was therefore concluded that mapping should be checked for error.

Samuel A. O. (2002).

Land Use/Land Cover change Detection. A Case Study of Bobi Gazing Reserve Mashegu LGA, Niger State

The research employed data from landsat MSS of 1970, Landsat TM of 1984 and SPOT (XS) of 1993, Topographic map of 1964, Livestock census of 1989/1998 and rainfall data of 1991/2000 for synoptic station. These were used by the researcher to investigate changes in the land use pattern of Bobi grazing reserve in Mashegu LGA in Niger State. The research work was based on computer interpretation of the imageries using ERDAS, ARC/IINFO and ARC/VIEW software. Results from the study reveled that all other human activities have continued to increase within the reserve thereby reducing drastically, the area earmarked for grazing purposes, It was recommended that for accurate and timely information, higher resolution imageries should be acquired.

Shaba, A. P. (2002)

An Application of Remote Sensing and EPS Technology for Land Cover Assessment in the Kainji Lake National Park

This study concentrated on the assessment of multi-temporal SAR images of Kainji Lake National Park and land cover studies as a contribution to proper management and sustainable development of the park. A multi – temporal SAR data of the study area, SAR images acquired on 16th August, 1994; 2 June, 1999 and 2nd April, 1996 were used. The three were assessed, classified and overlaid for susceptibility image. The results showed that the highest potential or susceptibility was large in size, that is (in) Grassland shrubs, followed by high – closed canopy wood land and open canopy wood land respectively.

Moderate' and the least susceptible is made up of the exposed bare ground land, rock outcrop, hill rivers etc. The study concluded that while agricultural activities, hunting and deliberate burning continue to take place at the park, they also constitute a danger to land cover classification which would have to be combated. The study recommended that remote sensing should be made readily available for each period of the season and made affordable to enable researchers arrive at meaningful management and sustainable utilization of the park.

Sunday, O. A. (1999).

Agrometeorology of Groundnut Production in Kaduna State

This study was carried out in response to the insensitivity to climate factors in agricultural planning in Nigeria as reported in the body of literature. The study was therefore intended to investigate agrometeorological factors as it affects the production of groundnut in Kaduna state. Data used for the study was collected from both the primary and secondary sources including factors influencing groundnut yield such as rainfall, temperature, evaporation, potential evapotranspiration and secondly agricultural data such as groundnut yield, in tones per hectare obtained from Kaduna State Agricultural Development Project (KADP). Correlation analysis of the data obtained reveled that out of 13 observed and derived parameters, onset – dates of rains, hydrologic ratio, climatic index, dry spell, length of rainy season, rainfall amount in May and June have significant relationships with groundnut yield. It was however, concluded, under simple linear regression analysis that only 5 of the above factors ie. Onset dates of rains, hydrologic ratio, and climatic index rainfall amount in May and June accounted for 68.50% of the variations in the yield of groundnut in Kaduna state. The study therefore

recommended that farming practices that maximize the positive and minimize the negative effects of these factors should be practiced.

Taiye, O. A. (1998).

Application of Photographic Remote Sensing Data to Assess the Road Network in Kaduna Township

The research aimed at assessing the adequacy of the road network of Kaduna township and its impact on road traffic with a view that the study will also make some modest contribution towards reducing traffic congestion currently affecting the town. The study used photographic aerial photographs of 2987 and 1993 at a scale!: 10,000 with supporting information form topographic maps, land use maps and field work as sources of data. The data obtained was interpreted using the basic low cost approach to mapping land cover (roads) from aerial photographs. Data was analyzed by the simultaneous use of cyclomatic number, alpha index, beta index and gamma index. These methods were used in order to provide accuracy check for the analysis and to correct any short comings of each. The results of the findings showed that the existing road network was generally inadequate. It was therefore concluded that the current road traffic congestion was partly as a result of in adequate road network system.

The study recommended among others that a study of other variables that contributed to traffic congestion such as poor road network pattern and bad road network connectivity system be further studied while the government was called upon to provide more funds for maintenance and construction of roads among others.

Takuma S. A. (2000)

Application of Remote Sensing to Land Use – Plan Implementation and Monitoring

The research is a demonstration of the application of Remote Sensing techniques in the implementation and monitoring of land use plan.To carry this out, a combination of visual and digital interpretation techniques were adopted using minor stereoscope and GIS facilities. The Analysis and evaluation were made using 1982 aerial photograph at scale. 1:50,000 and 1974 SPOT imagery at 1:40,000 and topographic sheet of 1:50,000. Ground truthing was carried out at different stages to verify doubtful areas and features the various thematic maps were determined with the modular (ILWIS 2:2 software package) in the simple GIS work station at NCRS Jos. The result showed an alarming increase in the areas of built up lands, this leads to gross deviation from the purpose and intent of the land use plan. Recommendation for the productive re – organization of priorities for environmental management purposes, and the integration of remote sensing into the data collection process among others were made.

Udo, M. E. (2002)

Mapping and Analysis of Drainage Patterns from Aerial Photographs: A Case Study of River Chanchaga in Niger State, Nigeria

This study investigated the source, course, pattern and basin subjects of river Chanchaga. Aerial photographs and a topographic map were used to acquire the basic information on the river Chanchaga drainage basin. The photos were interpreted manually and the information acquired were

transferred into base maps for a closer observation and analysis of the portions of the river. The analysis showered that a down sloping curve line graph was obtained which signified that all first and subsequent orders of small streams, tributaries and drainages flew from the high land areas through the slopes towards the lower plain valley of the main river Chanchaga where they emptied into the dam. It was concluded that the dominant drainage pattern, based on the analysis was the dendrite drainage pattern which signified the likely occurrence of horizontally bedded sedimentary rocks within the study area. The study recommended the development of remote sensing in Nigeria since it is a cost effective, accurate, easier and faster means of collecting data for sustainable development

Umaru, H. W .(1999)

The Use or Remote Sensing Technique for Evaluating the Impact of Illegal Gold Mining Activity in Minna and Environs

This study was carried out to defect and map out areas of illegal gold mining in Minna and its environs so as to be able to evaluate its impact on the environment. The mapping of the different categories of land use/and cover was carried out with the interpretation of arial photograph, topographic map and metric sheets of Minna. Methods employed included visual interpretation, ground truthing which was carried out at different stages to verify doubtful features. Two maps were generated and the extent of each category of land use/land cover identified and mapped was determined by grid in square meters to get the hectare of each category of land use/land cover. The results indicated that within 15 years, there has been a tremendous increase in agricultural land, followed by built up land and water body while range land, barren land and forest

land exhibit decrease in the area per hectare. The effect of illegal mining was discovered to be the direct hazards it has to people's life and property while yet, it causes pollution of water, damage to crop lands, unpleasant sights, formation of deep gullies, collapse of large chunks of soil and land shrinkage etc. The study recommended, among others that to guide against these menace, adequate enlightenment campaign against the danger done on the environment need to be introduced to serve as checks.

Usman, S. O. (2003).

The Geochemical Evaluation of Okaba Coal Deposit, Anambra Basin, Nigeria

Coal samples from Okaba (Odagbo) were used to determine its geochemical/geological characteristics and its possible suitability for coking or otherwise. The proximate and ultimate analytical results show that the coal cannot be employed in the steel industry for the generation of substantial heat for the working of the furnace for iron smelting. It can however, be employed as steam coal which can be used as fossil fuel in rail locomotives, steam boat, electricity generation, smokeless briquette and the production of calcium carbide used in the manufacture of acetylene.

Yahaya, T. I. (2001)

Effects of Rainfall Variability on Crop Production: A Case Study of Cassava in Kwara State

The focus of the research is on the relationship between Rainfall variability and crop production in Kwara State. Six stations were chosen to cover the whole state. Rainfall data for

each station for the period of ten years (1986 – 1995) were used in the analysis. An attempt was made to determine low rainfall variation affect the production of Cassava during the period of ten years. It was discovered that the amount of rainfall deviation from the mean, climatic index, onset cessation and length of rainfall season were closely related to cassava by production the use of regression and correlation equation.

Zakariya, D. A. (2001).

Inter – Annual Rainfall Variability over the Sudan- Sahel – A New Perspective

Abnormal rainfall fluctuations especially in the sub – Saharan African and Sudan Sahel region of Nigeria since the 1970 has had a lot of influence on human activities especially agriculture which is the main stay of the peoples economy. Daily rainfall data for 31 yrs (1969 – 1999) for twelve stations in the Nigerian Sahel were collected and analyzed to show inter-annual variability. A new index proposed as monsoon quality index MOI (Usman man, 2000) was applied to the data. Result show clearly the extreme shortfalls in rainfall in the Sahel in 1973 and 1983 and the good years of mid and late seventies and eighties, MOI is able to depict location – specific features as well as spatial variability

Department of Geology

Amoke, I. S. (2002).

Beneficiation of TALC from Kagara, North Western Nigeria

Benefication tests were carried out on talc samples from Kumuru – Kagara in the Kushaka schist belt of Nigeria. Chemical analysis of the samples indicated that the major oxides in the talc are 48.26% SiO_2, 31.29% mg0, 14.05% Fe_2O_3, and 2.28% AI_2O_3. Mineralogical examinations showed that the talc consists mainly of talc, magnetite, and magnetite minerals. Ores crushed to – 355+250m were effectively lifted with a hand magnet. At 63 m particle size, an average of 5% magnetic component were removed with a bar magnet while a laboratory electromagnetic separator produced up to 16.9% magnetic. Magnetic and froth flotation methods were therefore adopted for the beneficiation. Various floatability methods resulting into equally various yields were conducted. The yield ranged between 58.4% to 77%. The colour of processed talc was improved by bleaching with 50% hydrochloric and sulphuric acids. The processed talc compares well with commercial pure talc, and with further improvement, would be suitable for industrial specifications including those of ceramics, paint, paper, and pharmaceutical industries. Although pine oil frothier gave the highest yield of flotation concentrate, further investigations is recommended to prove the economic preference of salt solution.

Babangida, J. W. (1999).

Aspects of hydrogeology of Niger State

The author identified that the bedrock geology of the area studied composed of migmatites and gneisses, schists and gratuity intrusions that have undergone varying degrees of weathering. Ground – water in the region evolves through a complex process which has affected the recharge and discharge conditions, rock hydraulic properties as well as well yield. Two classes of aquifers, weathered and fractured zone were identified. The thickness of the weathered zone aquifers decreases from the Southern to the Northern part of the study area. It was also discovered that aquifers develop in close relation to the climate and the structural features present in the rock. Test on rock transmissivity and permeability showed that rocks are poor transmitters of water but improves in the Southern part of the study area. The ground water samples taken from various locations were found to be fit for demestic, industrial, and agricultural purposes and in accordance with standards set by the World Health organization (WHO).

Bawa, S. M. (1999)

Appropriate Bore-Hole Design and Construction in Basement Complex Rocks of Niger State

The study used the methods of stratigraphic information concerning the aquifer and overlying materials and grain size analysis of unconsolidated (weathered) aquifer materials. The required data was gathered by the study of eight bore holes within the study area. The result of the study showed that permeability of the weathered basement ranges between 2×10^3 and 21.71m/d. Appropriate slot size for screens and grain size for gravel packs computed on the basis of grain size

distribution analysis were found to be between the range of 5.2m to 10.8mm for slot openings and 10.4 to 16mn for gravel materials. The use of aquifer material as gravel packs or natural gravel envelope was recommended for some bore holes in view of the very coarse nature of the grain. It is expected that with this recommendation, high yielding bore holes with little or no maintenance costs, durable wells free from contamination will be provided.

Bodunrin, O. A. (1999)

Water Resources of Kwakuti and its Environs

The researcher found out that the major types of rock in Kwakuti area are low grade schist, migmatities, gneiss and older granite. The water sample from the hand dug wells and deep boreholes were taken and analyzed and found suitable for human consumption according to WHO standard. The sodium Adsorption Ratio (SAR) were also determined and found to be of medium hazard to the soil of kwakuti and its environs. The water demand in kwakuti and its environ was determined. From the water demand and the estimated available water, it was discovered that water supply to the study area is not adequate for the populace. It was therefore recommended that more boreholes should be drilled to improve the water supply of the area by either the State or Federal Government.

Essien, B. I. (2003).

Environmental Baseline Study around Dimension Stone Deposit in Galambi, Bauchi State, Nigeria

The study was carried out using such parameters as water, soil and plant (Guinea corn leaves) to find out the physico parameters of the water medium (P^H temperature and electric

conductivity) and the chemical parameters of the water (cations, onions and trace elements) both in the soil and plant prior to the commencement of future mining project in the study area. The thermometer, PH _meter and conductivity meter were used in measuring the physical parameters of water. Results obtained indicated that the level of temperature and conductivity for both hand – dug well and stream and river water varied to some extent. The chemical parameters of the cations and anions in the water were investigated using titrimetric, colometric, flame photometric, atomic, absorption spectrometric and acidity methods. Results showed that çations in the surface and underground water also varied. It was concluded that Galambi is an area of potential economic advantage with respect to quality dimension stone source.

Gyang, J. Davou

Assessment of Impact of Mining Activities on Parts of Barkin Ladi Local Government Area of Plateau State

The researcher observed that Tin Mining flourished the study area from the beginning of this century to the early 1980's and left behind a post mining environment scared by numerous mine ponds and dams etc. It was also observed that mining activity destroyed the scenic beauty of the environment and serve as death traps to both human beings and animals living in that area. Water samples from mine ponds and wells revealed that a manganese values of 0.9 mg// which is higher than the WHO highest desirable level of 0.05mg// was recorded. In other areas, the results showed chromium value of 0.1 and 0.12mb// which also exceeds the maximum admissible of 0.05/ concentration. However, the numerous mine ponds and paddocks were observed to serve as source of water for dry season farming, irrigation for vegetables as well as fish farms. It was concluded that the water samples did not show any

significant pollution to warrant serious concern while the numerous mine spoils could be converted to mine wealth by converting them to brick yards for making compressed earth bricks.

Idris – Nda, A. (1999)

Geophysical Survey Method for Ground Water Development in Crystalline Rock Terrain:

The study is a detailed geophysical survey for groundwater in Borgu Local Government area of Niger State. The objective of the survey was for rural water supplies and the determination of the best methods for surveys in the basement complex terrain. In the course of the study, further surveys were conducted in road cuts occurring along the Minna – Paiko road which were used as calibration models. The study found out that electrical method of investigation, consisting of the electrical resistively and the electromagnetic methods, is undoubtedly the most suitable method for ground water investigation in the basement complex terrain rather than the gravity and magnetic methods.

Omogbemi, O. Y. (2003).

Some Parameters of the Basement Complex Aquifers in Zamfara State

The researcher identified that the geology of the study area is characterized by gneiss, schist, migmatite, granite and grandiosity. Two major acquifers were also identified in the area namely the weathered regolith and the more specific fractured rock which is cross- cut by quartz and pegmatite veins from which over 80% of the boreholes investigated by

the study obtained ground water. Water quality analysis showed that ground water in the area was generally soft and fresh and could be classified as Ca – mg – HcO^{-3} type. Bacteriological analyses of the water samples indicate zero coliform reflecting low pollution of the ground water sources in the area. It was recommended that borehole designs in the area should take into consideration climatic influence on water levels, cost of construction and life span of the installed hand pump since the source of water supply is seasonal.

Rahila K. I. (2003).

Hydrogeology of River Chanchaga Catchments Basin, Niger State

The study is a hydro geological investigation on the River Chanchaga Catchments area. Doorenbos Pruitt and Blanney criddle formula for the estimation of potential evapotranspiration were the two methods used.

Data obtained from bore holes logs and geophysical surveys indicated the weathered aquifer zone thickness to be in the range of 10 – 36m lying above the sandy materials. The pumping test analysis indicated high transmisivity which is a reflection of the degree of weathering of the rocks. From geochemical analysis it was observed that all sources share identical relationships of chemical constituent and assumed to penetrate the same aquifers.

Uzonu, C. M.(1999)

Influence of Structures on the Permeability of Basement Rocks of the Federal Capital Territory (Abuja), Nigeria

The research discovered that the Federal Capital Territory (F.C.T) is covered by 80% basement rocks of Precambrian origin with majority of fractures trending NE – SW direction. The basement rocks, according to the study in most locations are highly weathered and fractured which increases permeability by about 0.6 – 10%. Where fractures are however expensive and well interconnected, overall permeability increases by about 68%. It was however observed that fractures tend to close up with depth and may be sealed up by deposition of secondary clay minerals. In view of that, it was recommended that while locating well sites in F.C.T. basement rocks, areas of intensive weathering, thick over burden and fracturing should be sought for.

Department of Maths – Computer

Magaji, A. S. (1998)

A study of Cropinathis Algorithm for Observable Systems

The research reviewed controllability and observability of systems in relation to Inouem State, functional observer and Gopinath's Algorithms. Gopinathg's Algorithm was extensively examined and a computer program for the computation of single pole of goliaths Algorithm was developed. The results were then used for the final analysis and conclusion. The conclusion is that an accurate state of observable systems can be determined, given on initial input and output, using Gopinath's algorithm.

Department of Physics

Adebunmi, S. O. (2003).

Spectral Analysis if the Residual Magnetic Anomalies over the Lower Bida Basin, Nigeria:

The study used four (4) half degree aeromagnetic maps of the study area to gather the required data. These maps were digitized on a 1.5km x 1.5km grid system and later combined to generate a unified aeromagnetic map of the study area. The qualitative magnetic trend analysis carried out indicate that the upper part of the area between latitudes 8.83^0N and 9.00^0N is characterized by E – W trending structure. The remaining part predominantly trends NE – SW while several closures of magnetic low and high, dot the study area. The residual anomalies were extracted from the regional background. The magnetic residual values range from -799.88nT (latitude 8.13^0N, longitude 6.72^0E) to + 173.49nT (latitude 8.38^0N, Longitude 6.68° E). The regional – residual separation exercise showed that the area is underlain by a NE – SW regional trend. Determination of the average thickness of the sediments was achieved by the use of statistical spectral analysis. The results showed that the surface of the basement beneath the lower Bida basin in undulating. The first layer (Z_1) varies from a thickness of 0.20km to 0.97km with an average thickness of 0.5km. The second layer (Z_2) varies from a thickness of 1.97km to 5.35km. with an average thickness of 3.16km. This result showed that the largest sedimentary thickness of 5.35km is located at latitudes 8.50° N and 9.00° N, Longitude 6.00° E and 7.00° E around Baro in Niger State of Nigeria. It was concluded that the prospect for hydrocarbon accumulation may be promising. The study therefore

recommended that given a sedimentary thickness of 5.35km, investigation for petroleum exploration be carried out.

Adetona, A. A. (2003)

Spectral Depth Determination to Buried Magnetic Rocks under the lower Sokoto Basin, Nigeria using Aeromagnetic Data

Statistical spectral analysis of the residual magnetic field values was employed to determine the depth of the magnetic basement rocks of the study area. The area lies between longitude 4^0 to 5^0 and latitude 10^0 30^0 to 11^0 30^0. This area was divided into 46 sections allowing spectral depth determination at every 15km by 15km interval. The spectral analysis reveals two prominent magnetization layers. The first layer depth varies from 0.22km to 0.96km with an average values of 0.487km. the second layer depth varies from 0.46km to 1.93km with average values of 1.44km. The second layer thus represents the depth to basement in the area and the thickness of the sedimentary formation overlying the basement complex within the lower flange of the Sokoto basin. The generalized depth to basement map produced therefore, reveals that the basin is generally shallow with a maximum depth of 1.93km which reduces the possibility of hydrocarbon accumulation. The study concluded that the absence of any major faulting even at the sediment basement boundary support the deduction that the southern sector of the basin probably originated from the tectonic movement within the Precambrian basement rocks. Further more, the magnetic estimate and the surface plot of the second layer depth reveals an irregular basement flour resulting from gentle folding of basement rock. The study recommend, among others that the Federal Government, through its agencies should sink few bore holes to

reach the basement of the Basin in order to be able to predict locations of fresh water aquifer and mineral deposits.

Agelaga, A. G. (2003).

Seismic Refraction Study of the Influence of Basement Topography on Existing Run – off Channel at Television Village Campus of Kaduna Polytechnic, Kaduna, Nigeria

A run – off channel or course of a stream behind Kaduna Polytechnic staff Quarters at College of Arts and Business Studies (CABS), Express Bypass, opposite Television village, was surveyed using seismic refraction method with the aim of determining the influence of the basement topography, if any on the run – off channel. The stream had its strike along the length of the field. Eleven profiles were thus selected such that each of them crossed the stream. They were 100m apart, parallel with each other and in the direction of the width of the field. The length of the field was 100m while the width was 500m. Each profile was therefore 500m long and each shot point along a profile was separated from the other by 50m making a total of 11 shot points. Ten geophones were vertically and firmly planted from the shot point at 5m separations along the profile in order to pick up the seismic wave that propagated through the ground. From the data collected, travel – time curves drawn for each shot point using MS EXCEL software while layer velocities were deduced from the travel – time curves. The results of the findings indicated three layers. The average depth to basement was found to be about 9m; the deepest depth to the basement was found to be about 14m and the shallowest depth about 4m. It was further revealed that from the contour map of depth to basement the stream course preferred the shallowest depth to the basement while probable sites for heavy structures, sand and clay quarries, and boreholes were also pointed out in the work. It was concluded that clay

could be quarried around the area represnted by North Eastern side of the map, sand obtained in areas around South central region and boreholes could be sunk in the Southeastern region of the study area.

Ani, C. (2001).

Seismic Refraction Studies of Tungan Kawo Dam Area of Wushishi, Niger State

The seismic refraction survey was carried out in an area beside Tungan Kawo where it is suspected that some host rocks and alluvium deposits may be having concentrations of gold (or other ores) deposits. Detailed work was carried out on eleven profiles covering an area of about (300×1000) m^2, using a three – channel enhancement digital seismography. The result indicated that the depth to the refractor areas varies from 2.25 meters to 17.43 meters with an a ravage of 7.74 meters. This variation indicated the degree of weathering and erosion of the bedrock whose irregular planar subsurface was subsequently filled with large deposits of alluvium forming a thickness as much as 16 meters. The average velocity of the first layer is $1700ms^{-1}$, representing a higher presence of dry alluvium, clay and sand in the overburden. The average velocity of the second layer is $6100ms^{-1}$, which invariably inferred that the bedrock in the survey area consist of rocks mostly of granite schist, with other volcanic (meta – igneous or igneous) rocks. The velocity values ranging from 717.65 $m5^{-1}$ to 2000 $m5$ found on the eastern and western part of the survey area indicates the presence of alluvium in the area. This alluvium is known to contain placers, quartz veins and lodes. Therefore, the geological claim of the presence of gold in alluvium in placers, quartz veins and lodes in these parts of the survey area is highly possible. It was recommended that an experimental

excavation be done down to the extent of depths corresponding to those regions of closures suggested by the analysis.

Danjana L. M. (2002)

Electrical Restivity Survey of Tungan – Kawo Dam Area, in Wushishi, Niger State Nigeria

The research is an investigation of the depth to the basement thickness of aquifer as well as the surface lateral restivity variations. The research was carried out at the Northern boundary of the Bida basin using a survey.The Basement contour map reveal that few points had high restivity, while the rest had low restivity. The map also reveal that the North East part of the Basement map, North – Western part and the Central part of the map toward the south have high restivity up to about 8.40m deep in deep. All the other parts have low restivity up to about 1.60m deep. These results agree with the geological features found in the study area.

Ekpe, S. S. (2002).

Application of Seismic Reflection Technic in Search for Oli in AX – Field off Shore (East) Area of the Niger Delta

The project is the interpretation of seismic data to determine the geological information and possible hydrocarbon accumulations within the structural framework of the area. Data required for the study was culled from EXXON – Mobil Corporation. The interpretation of the data collected was based on the correlation of three wells, AX05A, AX-06A and AX-07A. The study discovered that exploration for hydrocarbon is synonymous with the identification of structures favorable for hydrocarbon entrapment and search for sedimentary rock units that can generate, trap and accumulate oil. The study concluded

that at last four main fault blocks are believed to have separated hydrocarbon accumulations and different fluid contacts which were identified with AX structured complex.

Ekperikpe, . J.A. (2003)

Estimation of the Sandstone Thickness in Pategi Area, Nigeria, using Aeromagnetic Data

The study used one half degree by half degree map. The map was then digitized on a 1.5km x 1.5km grid. The trends from the digitized magnetic contour map were analyzed quantitatively. Least square polynomial fitting method was applied in regional and residual separation. Preliminary determination of the average thickness of sediments was achieved by the use of statistical spectral analysis. The results of the analysis showed that the Romanche paleofracture zone pass through the study area. Further more, the result of the spectral analysis showed that the surface of the basement beneath the Pategi area is undulating with the area having an average thickness of 2.78km. From the modeling results, at least four portions in the Pategi area where discovered to have sedimentary. thickness of up to 4.416km. In view of these results, Pategi area is thus considered to be suitable for hydrocarbon investigation.

Gaiya, S. (2003).

Geophysical Investigation of Groundwater Potential at Kaduna Polytechnic Form using Seismic Refraction Method

Kaduna Polytechnic farmland is mainly a basement terrain. The ABEM terraloc seismography was used for the reconnaissance survey. An orientation seismograph was

initially conducted in which six profiles were earmarked at 100m spacing, while the profile lines traversed 1000m (1km). A total of 48 spreads were sounded (forward and reverse). Data was collected, time distance curves drawn, velocities of the underlying layers obtained and depths of the overburden computed. The results obtained gave on overview of the lateral variation in the seismic energy response to the litholigic changes of the subsurface earth materials in the study area. The basement surface varied in depth and lithologic composition from depths as shallow as 5.0m to a maximum of 20.0m.The rock materials identified in the basement are chiefly saturated clay and sand, sandstones, gravel, metasediments (schist, hornfels, feldspar phillite) and perhaps rocks of Precambrian formation. Points with high potential were identified, delineated and recommended to agencies, individuals and managers of water resources in ground water searches among others.

Ige, R. O. O. (2003).

Compilation and Interpretation of the Aeromagnetic Map over North – East of Nigeria

In this research, a trend analysis of the aeromagnetic data over the Northeast of Nigeria which lies within longitude 11^030^1E and 13^000E and latitude 9^030^1 N and 12^000^1 was carried out. The area lies within the sedimentary basin of Nigeria. The eighteen maps that cover the area were digitized and recorded in 19 by 19 coding sheets. The digitized data were later compiled and contoured so as to produce a composite magnetic map of the study area. A qualitative interpretation of the total field of the area suggests that prominent anomalies have E – W trend. Quantitative interpretation involving cross – correlation coefficient analysis of the total field also suggest that in most parts of the area, the structures have E – W trend. Several

closures with steep gradients were found in the area around latitude 9825^0N and longitude 11.815^0E $-$ 12.235^0 E lies the most prominent closure with a high steep gradient. The nature of this closure is indicative of the deep $-$ seated structure that underlies the sedimentary rocks of the area. The study recommended that further geophysical work in the form of quantitative modeling of the vital closures indicated in the study be carried out so as to determine the sedimentary thickness of the area which further determines the petroleum potential of the closure area.

Irene, E. A. (2002).

The use of Synthetic Seismograms in Seismic Data Processing

The researcher studied the generation of synthetic seismograms for vertically incident waves on a multilayered horizontal medium, and also the determination of which event represents primary reflections and which represent multiples. The study also looked at the effect of changes in the reflecting layers on the seismic record. Detailed work was carried out on four basic models using an algorithm vertical incident seismogram program for the generation of synthetic seismogram.The result showed that vertically incident seismogram can be generated and primary reflections can also be determined from the multiplies etc.

Kolo, M.(2002).

Seismic Refraction Survey for Alluvial Deposits in a Gold Mineralized Area of Gora River in Niger State

This work was carried out on five major profile covering a total area of $400,000m^2$ using a portable three $-$ channel seismic

signal enhancement seismograph. Careful interpretation of the seismic data obtained, suing the Wyrobek method delineates two geographical sections. The first layer has an average depth to refractor of 8.5m while the second which is the refractor layer has refractor velocities range between 2857m/s and 6667m/s with an average value of 4755m/s. The contour maps for the velocities of both overburden and refractor at different shot points along the five profiles were constructed so as to delineate areas with high velocities. These high velocity area were found to be around the river channel. Since alluvium gold is associated with high velocity, the areas of high closures are likely gold bearing areas. It was recommended that an excavation of about 8.15m of the overburden around the stream channel is necessary before the gold – rich zone is reached.

Mohammed, F. L. (2003).

Seismic Refraction Investigation of the Central Part of the Federal Polytechnic, Bida, Nigeria

The study area of this research, Bida is located at the central portion of the Nupe basin which is one of the six sedimentary basins in Nigeria. The Federal Polytechnic, Bida lies approximately between latitude $09^0 01' 49''$ N and $09^{\circ \ ''} 15''$ N and longitude $05^0 59' 35''$ E and $06^0 0059''$ E. The survey was carried out along five major profiles, covering a total area of about $400,000m^2$ using a portable three – channel seismic signal enhancement seismograph. Careful interpretation of the seismic data obtained revealed two geological sections within the survey area. The first layer or topsoil, whose velocity V_1 varies between $1,333ms^{-1}$ and $2024 ms^{-1}$ with an average value of $1,742ms^{-1}$, has an average thickness of 5.9m. The second layer is the refractor layer whose refractor velocities v_2 ranges between $3,058ms^{-1}$ and $4,310ms^{-1}$ with an average value of $3855ms^{-1}$. The velocity range for the first layer indicates that

the top soil of the area is mainly composed of alluvium, dry sand, gravel and clay. The second layer velocity confirms that the refractor layer is mainly composed of sandstones, limestone and shale. The site most appropriate for the construction of underground water borehole is at the central part of the survey area and the site most appropriate for high – rise building is towards the eastern part of the survey area. The depth to refractor layer over the entire survey area is from 4.7 to 7.6m with an average of 5.9m. The study concluded that the refractor is mainly composed of sandstones, limestone and shaide. It was therefore recommended that the Polytechnic should conduct more in-houses geophysical surveys with a view of identifying suitable areas for various development projects on the campus among others.

Mohammed, I. N. (2002)

Electrical Resistivity Survey of the Niger State College of Education, Minna. Nigeria

This study covers only the southern part of the campus enclosing an area of $0.5km^2$ on longitude $6^0 50E$ and 7^0E and latitude 90N and $9^0 25N$. The techniques employed in this work are horizontal profiling/mapping, using Wenner array along the profile at intervals of 20m and Vertical Electrical Sounding (VES), using Schlumberger array which was carried out at six station points along each profile at an interval of 200m. The 36 VES data collected were reduced and analyzed automatically using the Zohdy programme. The results of the study revealed the suitability of electrical resistivity method in probing for the geological subsurface structures and underground water in the basement complex areas. Therefore, the weathered basement layer is considered the water – bearing layer while its resistivity values range between 100Ω – m – $200\Omega m$. The study recommended among others that the area

which are within the staff quarters and the principal officers' quarters should not be drilled for the ground water purposes and that pit latrines should be dug around this areas.

Nasir, K. A. (2002)

Geophysical Investigation of the Ground Water Potentials of Kaduna Polytechnic Area (SABO) using the Electrical Resistively Method

The study was carried out primarily to delineate areas of good ground water potentials in the study area. The Vertical Electrical Sounding (VES) and the Horizontal Electrical Profiling (HEP) were employed to gather the required data. The VES interpretation was done quantitatively to delineate the layers, their thickness and their apparent resistivity. These variables were found to have varying resistivity values. Meanwhile, the qualitative interpretation of Iso – resistivity maps of the VES and HEP showed that the best area identified for groundwater exploitation is the segment to the North – West and North – East and some portions in the extreme South – Western part of the investigated area. It was therefore, recommended that there should be test – drilling at the sounding points of the study area recommended for ground water exploitation.

Nzeh, P. U. (2001).

Seismic Refraction of kyanite Mineralization in Kuta Area, Niger State

The survey area of this research lies within the schist belt of Northwestern Nigeria with superficial deposit comprising fine sand and clay in different combining proportions, fadama, loam, laterite and weathered schist as the top soil. Detailed work was carried out on four major profiles of 840m length each and separated by 100m. This was done by using a portable three – channel digital signal enhancement seismograph. Interpretation of the seismic refraction data was done using the intercept time method (17M). The result showed a delineation of two geological layers in the entire areas surveyed. The thickness of the top soil (superficial deposit) or depth to the First refractor varies between a minimum of 4.44m and a maximum of 12.03m which averages to 9.56m. first layer or top soil velocity V_1 varies within a range of $1,471 – 3,704$m/s, with an average value of 2,038m/s. Second layer or refractor velocities vary within the range of $3,155 – 7,299$m/s with an average value of 5,320m/s. Therefore, using the velocity information and geological evidence, the areas within the study area where kyanite deposits are likely to be found were delineated - Within the high refractor velocity region (5000m/s and above) representing likely areas of fresh basement rocks, kyanite may likely be found in the veins of quartz schist's and quartiles. The study concluded that while the high refractor velocity region covers most centres parts of the survey area, the regions that are not likely to be kyanite bearing lie within the flanks of the survey area. The research recommended an experimental excavation to be conducted in the areas prone to kyanite availability.

Ofor, N. P. (2001).

Geoelectric Investigation of Kyanite Mineralization in Kuta Area, Niger State, Nigeria

Kuta lies within the North – west portion of 1:100, 000 Minna topographic sheet, 164.It is bounded approximately by longitude 6^0 42.9E and 6^0 43.3E and latitude 9^0 51.5 N and $9^0$51.9'N. The d.c resistivity method using the stratemeter resistivity model R – 50 was employed in carrying out the research. A total of four profiles each of length 840m and separated from each other by 100m was covered. Horizontal profiling was carried out along the four profiles using the Wenner array. The vertical electrical sounding was done on seven suitable points using the Schlumberger array. The interpretation of the VES was done using the automatic result retrieving computer programme. The results from the interpretation of the VES data collected suggest 3 – layers in most parts though there are some cases of 2 – layers. The resisitivity value for the first layer (top soil) varies from 19 to 115^0 hm – m and have thickness between 0.5 t0 1.64m. The second layer (fresh laterite weathered laterite and weathered basement) has resisitivty values of 317 to 859 ohm – m and thickness range of between 0.5 – 6,6m. The third layer appeared to be the fresh basement with resistivity value as much as 3650 ohm – m in some locations and greatest depts of about 33 meter around the northwestern portion. The VES further revealed that the entire northwestern portion and part of the northeast of the survey area showed relativity very high resistive formations. These areas may be kyanite bearing since they showed resisitivity values of 1000 ohm – m and above which lies within the resisitivity range association with kyanite embedded quantities and quartz schist. Further investigation using geographical method such as seismic refraction to determine the depth of bed rock was recommended.

Okai, Y. (2001).

Seismic Interpretation and Hydrocarbon Potential of Igbokoda Field:

The seismic interpretation of Igbokoda field was carried out on 18 seismic lines (9 dip and 9 strike sections) of 2 – D survey. The interpretation was done manually to generate a depth structure map which involved the use of a time strip and the conversion of the time from the check shot survey to depth (feet). Two main horizons were traced, time – looped and tied to obtain the look of the subsurface. The highlight of the findings showed the discovery of a new oil reservoir in the down flank of the study areas at a depth of 6,000 feet with a different oil/water contact. The discovery is recommended for the prospectivity of other down flank – plays in off shore leases.

Salissou , M. D. (2002).

Geophysical investigation of Suspected Gold Mineralized Area of Minna Sheet using Seismic Refraction Method

The study is an investigation of quartzites of the eastern Minna along Tagwai Dam road .Refraction survey was conducted over half (1/2) km^2 along profiles trending north – south. A total of 36 seismic lines of 60m each were shot and data was recorded and analysed.The result showed two layers; the first with velocities of 1785m/s to 2702m/s and the second layer has velocities ranging from 4347m/s to 7142 m/s, etc.

Shehu, A. T. (2002).

Spectral Analysis of the Magnetic Residual Anomalies over the Upper Sokoto Basin, Nigeria:

This study was carried out in order to estimate the average depth to the basement magnetic rock in the area. The study area extends from latitude 12^030^1 N to 13^030^1N and from longitude 4^000^0E to 6^000^1E and is covered by eight half degree aeromagnetic maps. These maps were digitized on a 2kmx2km grid and later combined to produce a composite magnetic map of the area. The least squares polynomial fit method was applied in the regional – residual separation. Then, the observed magnetic residual anomalies over the study area was divided into 60 sections, each made up of 14x 14 overlapping grid blocks, for the purpose of analysis and interpretation. The results showed that the spectral plots have two clear layers of magnetic sources. The first layer depths vary from 0.10km to 0.61 km with an average value of 0.367km while the second layers which represent depths to the basement magnetic rock vary from 0.34km to 1.99km with an average value of 1.386km It was concluded that the average second layer depth is rather small to allow for the accumulation of hydrocarbons. It was therefore recommended, among others that a detailed spectral depth determination with reasonable number of windows be carried out in the lower section of the Sokoto basin to give a general picture of sedimentary thickness in the basin.

Sule O. A. (2003).

Geoelectrical investigation at the National Eye Centre in Kaduna, Nigeria:

The study is a geophysical survey conducted at the National Eye Centre Kaduna. Horizontal profiling using Wenner array

in which each of the six profiles was mapped at 51 station points intervals of 20m was used to carry out the study. The data points were contoured to preduce a restivity map. The area anomalies were marked and interpreted. The findings of the study show that electrical resitivity method is suitable and efficient in probing for the geological subsurface structures and under ground water in the basement complex areas.

Yusuf T, U. (2003).

Trend Analysis of the magnetic field over the Niger Delta Area, Nigeria

The research is a geophysical investigation of the Niger Delta Area situated in the Southern part of Nigeria. Aeromagnetic data was used and the trends in the composite magnetic contour map were analyzed both qualitatively and qualitatively using cross correlation techniques. Chain and char cot fracture zones were discovered to pass though the Niger Delta area at the NE – SW directions, trending NE – SW and NE – SW respectively. Other minor magnetic lineaments were also observed

Department of Science Education

Aboderin, G. S. (2002).

The Influence of Pythagoras Teaching Model on the Learning of Mathematics at the Junior Secondary School Level in Minna, Niger State

The pretest – posttest experimental group design was adopted during the study using 160 Junior Secondary School (JSS) II students and 10 mathematics teachers from two co – educational schools in Minna. Collection of data was based on one type of mathematics visual teaching model, a pretest and posttest, one teaching package and a set of questionnaires for the teachers. After the pretest, four weeks of teaching, one week of revision and posttest, it was found out that if the teachers are thoroughly gromed, the use of Pythagoras will impact positively on the students. It was therefore recommended that the teachers should be trained and retrained to handle the teaching of mathematics using Pythagoras.

Abukakar, M. M. (2001)

The Effect of the Speak out Television Programme on Primary School Children's Oral Expression:

The study adopted a pretest – protest experimental control group design. A two and a half hour programme on children television network was recorded by the researcher and validated by experts was used. The programme covered debates and discussions of contemporary issues. The structures of the questions were open – ended. Two hundred pupils who were randomly selected from four primary schools in Bosso

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Local Government Area of Niger State participated in the study. The subjects were randomly assigned into two groups – the experimental and control groups. The experimental group received the instruction with exposure to the television programme while the control group did not. Before the teaching of the selected topics, each group was pretested. After eight weeks of teaching and one week of revision period, a posttest was administered to the two groups. The data obtained were analysed using mean, standard deviation and t – test statistics. The findings indicated that the use of "The Speak out Television Broadcast Programme" in the teaching of selected topics tremendously improved the performance of pupils in expression. It was recommended, among others that instructional Television be introduced into every primary school.

Adam, B. S. (2000).

Design and Construction of Multipurpose Projector for Individualized and Group Learning

In this study, the researcher designed, constructed and tested for effectiveness in the classroom, a multipurpose projector which can be used to project transparencies, film strips and slides. This is aimed at replacing the conventional overhead projector, film projector, and slide projector which were independent of each other. This effort was validated by experts in the various fields related to either the design, construction or the functionality of the projector. All the validators agreed that the device successfully achieves its purpose and that it conforms with the standard required. It was recommended that the design be patented so that the university could receive royalties from the sales of the product. This will enhance the revenue base of the university.

Bala, A. (2000).

Factors Responsible for the High Failure Rate of Students in Mathematics Examinations in Minna Post Primary Schools

The concern of parents, governments, educationists, teachers and the entire public motivated the researcher to undertake this study. Six secondary schools in Minna metropolis were randomly selected for the study. The instruments used in gathering the required data are the interview, observation and structured questionnaire administered to 30 mathematics teachers and 120 students. The data obtained was analyzed using descriptive statistics and chi – square statistical method to test the research question at P<0.05 level of significance. The findings showed that the low level of performance in Mathematics was as a result of the low teachers' quality, parents and students attitude towards the subject among others. The author recommended, in addition to others, the promotion of learning mathematics right from primary schools and avoidance of the notion of the mathematics is a difficult subject among the stakeholders.

Egbeji, C. V. (2003).

The Effect of Photographic Slides Presentation on the Learning of Fine Arts in Selected Secondary Schools in Minna, Niger State

Four randomly selected Secondary Schools in Minna were used for the study. A population of one hundred and twenty (120) Junior Secondary School Three (JSS3) Fine arts students was drawn by random sampling method. The subjects were divided into two groups, the control and experimental. Fifty validated test items were constructed and administered to the control and

experimental groups as pretest to determine their entry behavior. Teaching then commenced for a period of six weeks. The control group was taught conventionally with talk and chalk while the experimental group was target using photographic slides. A posttest was administered using the same test items. The test was scored according to a developed marking scheme. Descriptive and inferential statistics such as the mean, standard deviation and t – test were used to analyze the results and hypothesis. The major findings showed that the experimental group performed significantly better. It was concluded that the use of slides enhances the teaching and learning of fine Arts subject in Secondary Schools. It is therefore, recommended in teaching their subjects while students should be involved in the production of slides.

Elijah, T. B. (2002)

The Effect of Transparencies as Instructional Media on Students Performances in Building Technology in Technical Colleges in Niger State, Nigeria

This study was an attempt to assess the effect of transparencies on the teaching of stairs and bonding in building technology to Technical College form 1 (TC1) students. The study employed the pretest and post – test experimental group design. The pretest was collected before the teaching whiles the post – test was administered after four weeks of teaching and one week of revision. From the forty item multiple choice question marked over one hundred percent, it was discovered that there was 'significant difference in building technology mean achievement scores of students taught with projected transparencies and those taught without transparencies. Yet, there was no significant gender difference in achievement

among the group taught with the projected transparencies. The researcher therefore concluded that the use of projected transparencies could be used to enrich conventional repetitive chalk – and talk method of teaching. He then recommended that teachers should make learning/teaching more friendly, interesting, and meaningful by employing instructional media.

Fowoyo, J. T. (2000).

The Effect of the Use of the Square Progression Game on the Learning of Basic Mathematical Operations in Primary Schools

This study was aimed at investigating the relative effectiveness of practical teaching model as against the conventional teaching method in facilitating learning of some basic mathematics operations. The experimental pre – test posttest control design was adopted with a total of 75 pupils used under the two treatment conditions. The result obtained from the data gathered showed that square progress contributes positively to the acquisition of basic mathematics operations. Based on this, it was recommended that the use of squares progression game could serve as viable alternative to the traditional teaching method of mathematics at the junior classes in the primary schools.

Garba, L. (2001)

The impact of non – projected media on the learning of social studies at the Junior Secondary School level:

This study was carried out to gauge knowledge gained and teachers views on the use of non – projected media to learning social studies concepts. Achievement tests, interviews and questionnaires were methods used in gathering data. 200 JSS

students were taught for four weeks while questionnaires were distributed to teachers, students and school inspectors. The result of the analysis showed that those taught with non – projected media performed better while gender has no effect on the performance of the students. The use of non – projected media in schools was thus recommended.

Haruna, R. (2000).

Assessing the Use of Pictorial Simulations in Teaching Social Studies in Chanchaga local Government Primary Schools of Niger State:

The study assessed the effective use of instructional materials in the teaching of social studies. The Pretest – Post test experimental and control groups design were adopted for data collection. Another instrument of data collection used is culture and identity test (CIT). 200 students from four primary schools in the study area were randomly selected and assigned into either experimental or control group. The experimental group was taught with pictorial simulations while the control group was taught without. The two groups were pretested before being taught the concept of culture and identity. After four weeks of teaching the post test was administered to the groups and scored thereafter. Data obtained was analyzed using group mean, standard deviation and t – Test statistics. The findings revealed that there was a marked improvement in the performance by experimental group then the control group. The researcher therefore recommended among others that teachers should use pictorial simulations in teaching pupils to make instructions effective while on the other hand she implored the government to improve the welfare of teachers to boost their moral in teaching

Idris, A. M. (2000).

A Survey on the Availability and Utilization of Print and Non – Print Instructional Materials in Technical and Vocational Schools in Niger State, Nigeria

This research is on the availability and utilization of print and non – print instructional materials in technical and vocational schools in Niger State. Five research questions were posed to one hundred and eighty (180) teachers in all the schools studied. A test – retest method was used to determine the reliability of the instrument used. Data collected was analyzed using the mean, standard deviation and percentages. The findings revealed that there was inadequate provision of instructional materials in all the schools studied while yet, the teachers lacked adequate training and competence in using the available materials. The implication of the finding is that theoretically half – baked craftsmen are produced – those who have no usable skills or employable abilities. The researcher recommended that to avert this situation, technical and vocational institutions should be equipped with instructional materials while the teachers should be trained and retrained to function effectively.

Muhammad. E. S. (2003).

Effects of using Weighing Balance on the Learning of Linear Equation in Secondary Schools in Bida, Niger State:

The research investigated the effects of using weighing balance on the learning of linear equation in some selected secondary schools. The researcher used a pretest – post test experimental – control group design for data collection, and the data collected was analysed with t – test statistics. The result

showed a positive effect of using weighing balance on the learning of mathematics.

Nma, A. I. (2002).

An Investigation into Teachers knowledge of Functions and Availability of Educational Media in Selected Secondary Schools in Bida Education Zone of Niger State

The study is devoted to determining the authenticity of the use of media in making teaching and learning effective and interesting. Researcher's questionnaire were designed and administered to two hundred (200) stratified random sampled respondents drawn from five (5) Local Government Areas of Bida Education Zone. Three hypotheses were formulated and tested from the research questions. The hypothesis was subjected to the chi – square test for significance at .05 level. The computed chi –square values when compared with the critical values greatly exceeded the critical values and that led to the rejection of all the null hypotheses. The findings obtained from the study showed that learning becomes more effective when educational media materials are used in teaching. It was therefore, recommended that Principals, as school administrators should provide and encourage teachers in using educational media to enhance teaching and learning processes.

Obodozie, G. N. (2002).

The Effectiveness of Improvised Equipment in Projecting a Programmed Instruction in Career and Guidance in Junior Secondary Schools in Nigeria

This research focused on the construction of an improved television set for career guidance programmes in the Junior

Secondary Schools. The instruments for the construction were sourced locally at affordable prices and to be operated manually. Several research questions were raised while two null hypotheses were stated. The hypothesis were statistically tested using mean, standard deviation and t – test statistics. Student's responses were tabulated using percentile and frequency counts. The data collected was analysed using t – test statistics. The significant level for the statistical test of the hypotheses was put at 0.05. The results showed that the available contemporary research reports on career guidance in post – primary schools have it that poor and inappropriate methods of educating students on various careers expose them to serious career crises. Lack of non – existent qualified career guidance counselors, equipment/materials etc were discovered to be major problems associated with the programme. It was recommended that all tiers of government should provide financial assistance to encourage the few existing career guidance counselors and classroom teachers to use the improvised equipment for the benefit of students.

Ofili, G. O. (2001).

The effect of video packages on biology achievement of students in Secondary Schools in Niger State

The researcher postulated three hypotheses tested at 0.05 level of significance. Students of Senior Secondary School one (SS1) were used for the study. The students were divided into experimental and control groups. The control group was taught conventionally while the experimental group was taught with video packages. The data obtained was analysed and showed that there was no difference between the achievements of students in the two groups during the pretest design while there was a significant difference between the academic achievements of students taught with video packages and those

taught without video packages irrespective of gender. This showed that video packages could stimulate learning and therefore, the researcher recommended that the use of video packages in teaching/learning process should be encouraged in all schools.

Olumotanmi, C. M. (2000)

Effect of Pictures on the Leaning of English Language in some Selected Primary Schools in Minna, Niger State, Nigeria

The focus of the study is the beginner – second language learners in the primary School. The pretest posttest, experimental and control groups design was used to facilitate data collection. The study sample was 160 primary four pupils randomly selected and divided into experimental and control groups. Ten pretest questions was administered to both groups before teaching. Then, same number of questions were administered after teaching which exposed the experimental group to pictorial instructional materials while the control group was not. The findings of the study revealed a positive effect of pictures/ pictorial on the learning and teaching of English language. The researcher recommended the use of pictorials in the teaching and learning of English language and other subjects among others.

Sule, A. (2000).

Teachers' Perception of the use of Instructional Media in Junior Secondary Schools in Minna Local Government Area of Niger State

This study is an attempt to assess teachers' knowledge of the essential features of instructional media. Survey research method was employed using questionnaire which was validated by seasonal educators. 140 teachers handling Junior Secondary Schools in Minna LGA were used for the study. Data gathered was analysed using percentage, mean, standard deviation, bar chart, frequency curve and chi – square. The result of the study showed that majority of the teachers did not understand the concept/meaning of instructional media though they were aware of some hardware used in teaching and learning processes. The researcher recommended among others that teachers should be taught on how to design, develop and produce instructional media during their training while the State Government should provide enough fund to purchase instructional materials in schools.

Sunday, P. U. (2000).

The Effect of Visual Aids and Tactile Stimuli on the Teaching of English in Selected Secondary Schools in Bosso Local Government Area of Niger State:

The design adopted for the purpose of data collection was pretest – posttest experimental – control groups using Descriptive Composition Test (DCT) and Expository Composition Test (ECT). One hundred and sixty students from co – educational schools were randomly selected for the study and assigned to either experimental or control group. Before the teaching of the concept, both groups were pretested. After

four weeks of teaching and one week of revision the posttest was administered to the two groups. After the marking, the results indicated that the use of visual aids and tactile stimuli in the teaching of English language improved the performance of students in the subject. It was, among others recommended that Niger State should find and organize workshops and conferences on the production of visual and tactile materials to boost the teaching and learning of English Language in Schools.

Tukura, C. S. (2001).

The Effect of the Overhead Projector and Software on the Learning of Social Studies in Secondary Schools in Bosso Local Government Area (LGA) of Niger State

The researcher adopted a pretest – post test experimental control group design to gather reliable data. An instrument made up 80 – item objective test covering all areas in social studies was used. 240 students randomly selected from four co – educational schools in the LGA were used in the study. The students were divided into experimental and control groups – one used overhead projector, the other didn't. Both groups were tested (Pretest) before teaching. The posttest was administered after four weeks of intensive teaching with one week revision period. The analysis of data obtained showed that the use of overhead projector significantly improved the performance of students irrespective of gender. It was recommended that overhead projectors should be employed in teaching various subjects while the teachers should be trained to handle them appropriately

SCHOOL OF AGRICULTURE AND AGRICULTURAL TECHNOLOGY

Department of Animal Production

Akhaluola, F. C. (2003).

Microbial Load and Mimosine Activity in Milk and Blood of Savanna Brown Goats Fed at Different Levels of Leucaena Leucopcephala Supplemented with Free Grazing:

Sixteen Savanna brown does aged between 12- 18 months were used for 150 days for the study. Treatment diets were formulated in a Randomized complete Blook (RCB) design. Treatment T1 had 0% leucaena while T2, T3 and T4 had 20%, 30% and 40% leucaena respectively. Other ingredients used include groundnut cake, rice bran, maize bran and salt which were varied to give crude protein values of 13. 29, 12.54, 13.24 and 11.15 for treatments 1, 2, 3 and 4 respectively. The results obtained revealed that pH of the blood or meat remained weakly acidic. The protein, ether extract, total solid, total ash, solid not fat, moisture content and pH of the milk from the savanna brown goats under different treatment varied. The result of the DHP degrading i.e. activity in the blood samples revealed different colour changes. It indicated that mimosine or DHP was present in the blood samples analyzed. The experiment indicated that the blood metabolite was not free from mimosine but when degraded by rumen floral, animals might begin to cope with the toxic effect of mimosine. The milk was rich in nutrients, free from mimosine but loaded with

varied amounts of bacteria, mould and yeast. It was therefore recommended that goat's milk should be collected and processed under strict hygienic measures and before collection, a two weeks time lag should be observed after leucaena based diet had been withdrawn.

Aminu, A. (2001).

Prepartum and Postpartum Changes in Domestic Rabbits Fed Varying Levels of Dietary Protein and Tridax Procumbens Forage:

The researcher used eleven adult rabbits for the study. They were divided into four treatments such that the first three treatments had three does while the last treatment had two does. The result of the data collected and analyzed showed that feed concentrates plus forage combinations given to rabbits are more beneficial for reproductive performance and growth of both adults and the weaners while forages like tridax procumbens alone as source of feed cannot support optimum reproductive performance in rabbits.

Bello, N. S. (2001).

Influence of Exogenons Testosterone on Castrated and Intact Savanna Brown Bucks

Castrated and intact savanna brown bucks kept under a semi – intensive management system were treated with weekly intramuscular injection of testosterone propionate at a dosage rate of 1 mg per kg body weight over a period of 12 weeks. The research found out that animals did not gain weight irrespective of the treatments. It was therefore suggested that the use of testosterone propionate to enhance growth and

weight gain in savanna brown bucks is not viable under field conditions. In view of this, the author opined that the insidious threat of recurrent sub – clinical infections, poor and inadequate nutrition must thus be curtailed if not eliminated in order to achieve good results.

Daniel, N. T. (1999).

A Survey of Animal Protein Intake in Five Local Government Headquarters (Bida, Katcha, Kutigi, Minna, and Suleja) of Niger State

As suggested in the title, the study is an investigation of the level of animal protein intake in the areas of study. The researcher also sought to find out factors affecting animal protein intake as well as the level of people engaged in the production of livestock and livestock products. The result revealed that despite the fact that majority of the respondents were aware of the importance of animal protein, its intake was rather low. Where available, the researcher further discovered that the fathers were favored in taking the highest portion while the mothers, children and the sick are less considered and consumed an integral part. He attributed the low level of animal protein intake to limited financial resource. He then recommended that to improve on the situation, every attempt should be made to boost livestock production in the country in addition to encouraging indigenous breeds of livestock and poultry.

Danwake, J. G. (1999).

Growth and Carcass Characteristics of Rabbits Fed Diets Containing Varying Proportions of Rumen Injesta

The study used twenty mixed – bred grower rabbits weighing between 500 and 520g and aged between 8 – 10 weeks in a feeding trial which lasted for 15 weeks. The rabbits were assigned to four experimental treatments each containing varying proportions of dried rumen injesta of 0%, 20%, 35% and 50%. All the four treatments were offered amaranthus hybridus as source forage. The result of the carcass analysis revealed that rabbits with 50% rumen injesta in their diet had a significantly lower (P<0.05) eviscerated weight suggesting that the inclusion of a high proportion of rumnen injesta in the diet adversely affected carcass yield. He however, concluded that with the inclusion of 20% and 35% dried rumen injesta, there was no significant effect on their live weight and carcass characteristics.

Ibrahim, H. (2003).

Bacterial Assessment of Fermented Milk Blended with Ground Millet Product (Fura – Da – Nono) in Niger State

Fura – da – nono samples collected in Zone A, B and C areas of Niger State were used for the study. While the Zones represent the treatment, T1, T2 and T3, each town represent the replicate R1, R2, R3 and R4. The experiment conducted between June to September, 2003 was to determine the bacteria assessment of the samples collected within Niger State. Bacterial species identified included streptococcus ssp, strephylococcus aureus, Bacillus spp, pseudomonas a eruginosa, Escherichia coli, Bacillus subtiles, streptococous

bulgaricus and Lactobacillus spp. Total viable bacterial and photolytic counts varied. The values for the hemolytic, lactic acid and coli form counts were also found to vary. Streptococcus species had the highest frequency of occurrence of 34.8% while lactobacillus spp had the lowest with 13 % . Bacteria count for Zone B(Bosso, Kuta, Minna and Suleja) had the highest isolates with 33 followed by Zone C (Agwara, Kontagora, Rijau and Wushishi) with 23 while Zone A (Agaie, Bida, Lapai and Mokwa) had the lowest with 22 isolates. Biochemical analysis of Fura – da – nono samples revealed parameters such as total solids, lipids, pH, crude protein, moisture and solid – not – fat varied from treatment to treatment. Field survey of consumer acceptability shows that 99% of the respondents would like to take Fura – da – nono. It was therefore recommended that further studies into ways of combating these bacteria be conducted.

Jiya, E. Z. (2001).

Meat Yield and Carcass Composition of Broilers Fed Alkali Treated Rice Bran

The research is an investigation of the effect of trona and Nacl treated rice bran on performance and meat qualities of broilers. Nine different treatment diets were formulated. The diets were fed for nine weeks in each of the two experiments. The result of the analysis of data collected showed that body weight, body weight gain, cumulative feed intake, feed/gain ratio, nutrient gained, meat characteristics and sensory revaluation were not significantly different (P>0.05). However, mineral contents and mineral gained were significantly different (P<0.05). These results showed that treatment of rice bran with 3% of both trona and salt containing 5 and 10% rice bran performed best and that there was no sufficient effect of diets on performance and meat qualities of broilers.

Muhammad, A. B. (1999).

The Effect of Graded Levels of Rice Bran as a Source of Fiber in the Diet of Broiler Chicken at Finisher Stage

This researcher, after necessary investigation discovered that the use of rice bran in formulation of poultry feed has a limited scope. He came up with the result that increased levels of dietary fiber caused an increase in feed intake with a corresponding poor growth response and lowered feed efficiency. Thus, the higher the fibers level, the lower the feed efficiency. In addition to this, he found out that the palatability of meat obtained from the highest level of rice bran treatment group (20%) was better than that of 5% with particular reference to tenderness. Hence, the juiciness and flavor increase with decreased rice bran levels in the ration. It was finally discovered that there is an economic benefit in producing birds at 20% rice bran inclusion in poultry feed and that the benefit increases as the rice bran levels decreases.

Muhammad, A. M. (2001).

Egg Production and Egg Quality Characteristics of Pallets Fed Graded Levels of Cotton

This study is carried out to find out the effect of feeding 104 days' old pallets with cotton seed cake on their egg production and egg quality characteristics. The results obtained showed that feeding cotton seed cake up to 30% level in chick mash and up to 10% level in growers' and layers' mashes did not significantly affect the percent hen – day production and the internal and external qualities of egg. However, significant effects were observed with the final weight of birds and percentage of cracked eggs.

Thomas, G. K. (2001).

Body Conformation and Carcass Characteristics of Male, Female and Castrate Male Savanna Brown Goat

The study focused on body measurements, live weights, and body condition and carcass characteristics of the type of goats studied. It was revealed that there were significant differences (P<0.05) between the three groups in respect of some carcass characteristics such as lumba – sacral region, the neck, head fat, skin and offal. The study, after due examination of the samples recommended the castration of male goats because that could be of economic benefit to farmers since growth rate, body condition, increased meat after slaughter are enhanced without any significant adverse effect on dressing percentage.

Department of Crop Production

Abdullah, M. K. (2003).

The Role of Melon on Weed Control and Crop Yield in a Yam/Maize Based Cropping System

Experiments were carried out to determine the role of melon (colenynthis citrullus) on weed control and crop yield in a yam/maize based cropping system during the planting seasons of 1998 and 1999 of the teaching and research farm of the Federal University of Technology, Minna. In 1998, various melon populations (20,000, 13,000, 6,650 and 3,300 plants/ hectare) were used to evaluate weed control ability and the influence of the various population on the yield of the component crops. The kpako cultivar of yam, TzCB – y of maize and a local variety of melon were used for the year's study. In 1999 one more yam variety (Giwa) and sole plantings of yam and maize were factors added for assessment. The experiment was arranged in a randomized complete block design in both years. Results showed that melon planted sole at 20,000 plants/ha and in combination with yam and maize at 13,000 plants/ha rapidly covered ground surface of 10 and 12 weeks after planting, and there by smothered the weed more. The melon population had the lowest weed dry matter per plot and sole crops had higher individual yields as against when in combination. The presence of melon in the inter crop did not significantly reduce the yield of either yam or maize, it rather reduced the weeding frequency of the inter crop plots.

The Response of Promising Upland Rice Varieties to Nitrogen Levels in the Southern Guinea Savannah Zone of Nigeria

This study involved two field experiments conducted at the Federal University of Technology, Minna farm during the raining season of 1999 and 2000. The experimental design was complete randomized block design while five levels of Nitrogen, 0, 20, 40, 60, 80 kg N ha^{-1} as urea was used for the trial. This was applied in two does at 2 weeks after sowing and panicle initiation. Single doses of phosphorous and potassium fertilizers as SS.p and Muriate of potash were applied after sowing at the rate of 30kg/ ha^{-1}p$_2$ 0$_5$ and 30kg ha^{-1}k$_2$^{0} respectively. 8 to 10 seeds/ hill were sown with 25cm x 25cm spacing though later reduced to 4 seedling/ hill. The result of the findings revealed that at the highest fertilizer level (80kg N ha^{-1}) plant height at 90. D.A.S range from 100.23 cm to 113.6cm giving an average of 107. 48cm in the first year. In the second year, height was reduced to between 84.27cm to 94.97cm giving an average of 89.38 cm. Similarly, grain yield in the second year showed a significant lower yield than the first. The difference in crop yield may be attributed to soil problem because there was no marked climatic change between the two seasons. It was therefore, recommended among others that farmers desiring to grow upland rice in this area should choose soil that are rich in organic matter or grow it in rotation with leguminous crops so that soil nitrogen reserve would be high and higher rates of fertilizer may not be needed.

Kanwal, D. H. (2009).

A study of Horticultural Crop Production in Niger State

The research is on the study of horticultural production in Niger state with the aim of identifying the types of horticultural crops that are produced in the state, to enable farmers see the need to engage in horticultural farming and to identity some of the problems being found by horticulture farmers in the state.Random sampling and questionnaires were used to collect the data for the study. The data collected was analyzed by the use of tables, percentage as well as cost income analysis. Citrus (orange), mango, cashew, guava, grapes, tomato, okra, pepper (Rodo and Tatashe) and green vegetables are some of the horticultural crops being grown in the state. Unavailability of seeds/seedlings, inadequate credit facilities, poor storage facilities, lack of adequate transportation or high spoilage rate are some of the problems identified by the study.

Kortse P. A. (2002)

A study of Seed Development, Maturation, Dormancy and Vigour in Pepper (Capsicum AnnuumL)

The study examined freshly harvested red ripe fruits of (capsicuan annuumL) cultivars' Tatashe' and 'Rodo for the purpose of extracting their seeds for nursery establishment for future transplanting. After undergoing series of experiments for several days, the study discovered that contrary to the parameter used by most pepper farmers to determine maturity and plan for harvest which is the visual expression of ripeness, seeds continue to mature at the end of the seed – filling phase. It was therefore recommended that pepper fruit for seed

extraction should be harvested at the fully ripened stage. This is because harvest at full repining stage may produce good results. However, fast germinability and longevity can be obtained from over ripened fruits. For this reason, it is further recommended that if it is expedient that fruits must be harvested at the fully ripe stage, they may be kept aside for few days before seeds are extracted from them for optimum quality. Therefore harvesting at colour breaking stage should be avoided.

Mohammed N. K. (2000).

Screening of Rice Accessions (0.gla berrima steud and 0 sativa linn) Against African Rice Grall Midge (Orseolia Oryzivora and Stem Borer)

The research is an investigation of the effects of pests on rice at various periods. To carry out the investigation a total of 159 lines of oryzaglaberrima steud accessions and 47 lines of oryza sativa line accession collected from the National Cereals Research Institute Badeggi, Resources Unit were screened against African Rice Gall Midge and stemborer in the experimental field. Fifty accessions of oryza glaberrima and 33 accessions of 0. sativa were also screened for Gall Midge resistance in the screening house.The result showed that the levels of infestation by both pests increased as the growing season progressed. Infestation in the screening hours was higher than in the field. Oryza glaberrima species were more resistant to the two pests as compared to oryzasativa accessions. Seventeen entries of 0.glabrrima and ten entries of 0.sativa accessions were observed to be more tolerant to ARGM and stemborer.

Muhammad A. B. (1995).

The effect of Micronutrients, Natural and Synthetic Fungicides on Growth, Leaf Blast Reaction, Yield and Crude Protein Content of three Upland Rice Varieties

A field trial was conducted on the effects of agrolyser, neem seed extract and benomyl on plant height, tillering capacity, leaf blast disease reaction, paddy yield and crude protein content of farox 408 – 1- 1, ITA305 and WAB 35 – 2- fx varieties of rice. The result of the study indicated an increase in the yield of all the variables measured though the varieties differed on their potential to grow tall, tiller, resist leaf blast disease and in the crude protein content. Meanwhile, the risk of getting infected by spraying favored the use of neem extract rather than benolnyl.

Muhammad, K. A. (2000).

The Role of Mellon on Weed Control and Crop Yield in a Yam/Maize Based Cropping System

The experiment to determine weed control ability and effect on production was conducted during the planting seasons of 1989 and 1999 at the Teaching and Research Farm of the Federal University of Technology, Minna. In 1998 various melon populations such as 20,000, 13,000, 6,650 and 3,300 were used. The Kpako cultivator of yam, TZEB-Y of maize and a local variety of melon were also used for the year while in 1999 one more yam variety (GIWA) and sole plantings of yam and maize were factors added for assessment. The experiment was arranged in a randomized complete block design in both years. The results revealed that melon planted at 20,000 plants/ha and in combination with yam and maize

plants/ha rapidly covered the ground surface within 10 and 12 weeks after planting and thereby smothered the weeds more. The findings also revealed that sole crops had higher individual yields as against when in combination while the presence of melon in the intercrop did not significantly reduce the yield of either yam or maize but rather reduced the weeding frequency of the intercrop plots by at least once. The study recommended among others that where melon is a component of an intercrop system, it should be planted first.

Muhammadu, K. N. (2000).

Insecticidal Potentials of Azadiraclita Indica, Tephrosia spp and Annona Senegalensis for the Control of Field and Stored Cowpea Pests

This study is a contribution to the search for non – toxic alternatives but effective control measures for storage pest of cowpeas. The author argued that the increasing report of food poisoning due to synthetic chemicals used for preserving crop – produce and food items particularly during the period of scarcity, coupled with current high cost of these chemicals in Nigeria was the basis for carrying out this study. Thus, three local herbs, tephrosia spp, azadirachta indica, and annona senegalenses were used. The study also tried to establish the efficacy and contribution of the morphological parts of these herbs on cowpea yield and in controlling both the field and storage pests. The results of the study according to the researcher were positive.

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Omolohunnu, E. B. (2000).

Interactive Effects of Different Dates of Planting and Application of Neem Extract and Benomyl on the Diseases and Yield of Three Cowpea Varieties

The study was carried out to ascertain the major pests and diseases that militate against cowpea production in the Federal Capital Territory (FCT) between August and September, 1995. The three cowpea varieties used during the two planting periods, August and September were IAR48, IAR1696 and Kananado. The results revealed that August planting gave significant higher yields. Also, there was a significant effect of the fungicides applied on yields P = 0.01. Yet, the yield obtained from the use of benomyl was the highest but was closely followed by that of the neem leaf extract sprayed on weekly basis. It was therefore recommended that cowpea be planted within the month of August in the FCT.

Rufus, B. J. (2000).

Assessment of the Performance of Advanced Groundnut Lines (Arachis Hypogaeal) in the Federal Capital Territory when Sprayed with Benomyl and Neem leaf Extract to Control Leaf Spots and Rust

The study is an investigation of the effects of mycophaerella arachidis Deighton (cercospora a rachidicola Hori) and Mycophaerella berkeleyi), Jenkins (Cerlosporidum personatum (Berk and curt) Deighton) and rust caused by puccinia arachidis speg on groundnut leafspots. To carry out the investigation, twelve groundnut varieties were sprayed with Benomyl and Neem leaf extract at different periods (Spray regimes). From the study, variety ICGV – 87123 gave the best

yield of 2712.50kg/ha. While the good yield was from variety M516 – 761 irrespective of the treatment. Application of Neem leaf extract was therefore recommended for farmers, but should be sprayed weekly.

Simon, L. N. (2000).

Effect of Time of Harvest and Storage on Seed Quality in Four Lines of Okra (Abelmoscus Esculentus (L) Moench)

Crops of four lines of Okra namely L27, FUTM1, FUTM2 and FUTM3 were established at the FUT, Minna Teaching and Research farm. Flowers were date – tagged at anthesis, that is, immediately they opened. In one experiment, fruits were harvested at 4,7,14,21, 28, 35 and 42 Days After Anthesis (DAA). Prior to storage, germination of seed in the four lines harvested earlier than 35 DAA was poor. However, a significant improvement of up to 97% was obtained at 35 DAA. In another experiment, harvesting of all date –tagged fruits was done when all the fruits were dry. Germination improved generally within the first six to nine weeks of storage. It was therefore concluded that Okra seeds generally germinated better when harvested at 35/42 DAA.

Tanko, M. D. (2002).

Evaluation of three Local Plants for the Control of Storage Insect Pests of Maize and Cowpea

This study is on the application of herbs in the control of storage insect pests of maize and cowpea. The herbs are Cissampelos Owariensis, Tophrosia and Momondica Charantia. The trial consisted of five treatments of maize varieties and four treatments for the cowpea, all replicated

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three times in a complete randomized design. The whole parts of the herbs (root, stems and leaves) were used in each case. The results of the study showed that treatment with momondica charanti gave a better result than Tephrosia sp and cissampelos Owa nensis respectively for both maize verities while Cissampelos Owariensis gave the best result for the storage for cowpea grains. In another dimension, the author identified that all the herbs used in the study have local medicinal properties peculiar to all peoples/tribes in Niger State for the treatment of stomach ailments/pains. However, this calls for further investigation.

Waziri, A. (2002).

Effect of Organic Manure and Placement Methods on Weed Infestation and Yield of Two Yam Varieties

The study was to establish principally that the incorporation of organic manure into soils will not significantly affect the sprouting and ultimate yield of Giwa and Dindinya variety of yams growth in Niger State. The sources of organic manure used were cow dung, rice husk and poultry manure. Treatment where cow dung was used had significantly higher mean yields compared to the other treatments of rice husk, poultry manure and synthetic fertilizer which was the control. The mean total number of tubers per plot for Giwa variety was significantly different from that of the Dindinya variety. Giwa variety was however observed to have higher percentage of dry matter content than Dindinya. Based on this finding, it was recommended that cow dung is the best organic manure to be used in yam production and could even replace synthetic fertilizer.

Zhiri, J. S. (2003).

Assessment of Three Cultivars of Pepper Fruits for Their Weed Suppressing Potentials

This study involved the use of extracts from the pulps and seeds of three varieties of pepper as weed suppressing agents. These are Tartase, Atarodo and long finger. The result of the effect of pepper spray on height of weeds shows that whereas the long finger pepper was effective in disenabling the weeds from growing taller, the tartase variety encouraged the growth of the weeds as the former had the least and latter the greatest weed height respectively. The results of changes in weed biomass also showed that all the factors and their interaction had very high significant effect on the observed changes in weed density. The researcher however concluded that this research work does not support the thinking that allelopathic properties are responsible for pepper farms being free of weeds. In addition to that it was also observed that neither extracts of pepper pulps nor seeds exhibited had reliable herbicidal effect on weeds. It was therefore recommended among others that additional work which will consider the whole plant roots, stem, leaves and pulp be done to determine the efficacy of pepper as eliminating factor of weeds.

Department of Fishery

Abubakar, M. I. (2001)

A Survey of Fungal Infestation of Some Selected Commercially Important Fishes in Selected Ponds and Fish Markets in Minna, Niger State

The study examined the following fish species to determine the fungal infestation of fishes. They include Oreochromis, nilaticus, tilapia Zilli, clarias gariepinus, lates niloticus, bargus bayad and eleotis senegalensis. The fungi isolated were aspergillus flavus, aspergillus fumigatus, aspergillus niger, fusarium spp, microsporium spp, mucor spp and rhizopus stolonifer. The result of the finding revealed that the most frequently occurring fungal species was aspergillus niger. It was recommend that since aspergillas spores are air borne; the pond and its surroundings should be maintained and cleaned on daily basis to prevent the growth of fungi. In addition to that, fungistatic paints may be used on walls, ceilings and all structures that are likely to be subject to fungal growth.

Abubakar, M. N. (2000).

Studies on Shelf- Life of Solar- Dried Oreochromis Niloticus

During the drying exercise five parameters; proximate composition, physical appearance, texture, infestation and bacterial count were studied. The fish were dried for seven days. Two solar tent dryers in additions to the conventional sun – drying methods were used. One of the solar tents had black stone heat collector while the other had charcoal. At the end of the drying, the products of the three methods were subjected to

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eight (8) weeks of storage studies in which all the parameters highlighted were considered. The relative proximate composition of the productions in terms of moisture, protein, lipid and ash contents were as follows:

Protein: 67.18%, 66.99%; 69.08% for sun dried (SD);
Solar tent with charcoal base (STDC) and Solar
tent with black stone (STDB) respectively.
Moisture: 13.76%; 12.09%, 11.12% for SD; STD C
and STDB respectively.
Lipid: 9.5%; 10.27%; 10.28% for SD; STDC and
STDB respectively.

Ash: 9.56%; 10.65%; and 8.81% for SD, STDC and STDB respectively. Of the three treatments, insect infestation and little physical damage occurred only in SD. No discoloratation in all of them and while the sheen was dull in STDB and STDB, it was bright in SD. In all, the texture was firm, no incidence of mould was seen but the initial bacteria load was high but gradually decreased with yet more in treatment SD than STDC and STDB. The stored product showed a declined protein contents for all treatment but more persistent in SD. In all, the SD dried products suffered great infestation and consequent server physical damage in the last five weeks of storage. The research into the iodine and peroxide values of stored solar – dried products was recommended in addition to finding out the effect of paint (black stone) on fish products.

Alao, I. A. (2000)

The Utilization of Edible and Non – Edible Soybean Fractions in the Practical Diets of Tilabia Oreochromis Niloticus Late Fry

This study investigated the utilization of edible and non – edible soybean fraction in the practical diet of tilapia (oreochromis niloticus). it was discovered through series of experiments that soybean bran considered not edible to man could be hydrolysed and utilized as digestive soybean bran (soybean bran soluble SBBS) and included in the diets of tilapia (Ooeochromis Nnloticus), to a limit, as protein source due to its relatively poor protein digestively. However, the experimental results showed that soybean scurry residue (SBSR), soybean milk (SBM) and soybean milk concentrate (SBMC) could be incorporated into the diets of tilapia without much limitation. The study therefore recommend that utilization of soybean in human nutrition should be complimented with that of aquaculture nutrition while waste generated from the proceed which could pose a serious threat to the environment could be biotransformed into first class fish protein.

Ayanwanle, A. V. (2003).

A Survey of Fungal Infestation of Some Commercially Important Fishes in Tagwai Dam, Minna, Niger State

This study was carried out from March to June, 2002. The fungi were isolated from three main parts of the body, scale/skin, gills and fins. Twenty one fungi species were identified from 18 species of fish. Microbial growth was

measured by direct cell count using Stuart colony counter. The study revealed that fungal infestation occurs among all the species of fish sampled and most of the fungi encountered are of the mould group. The infestation was predominantly from the aspergillums species and the most widely affected part of the body was the scale/skin. The results obtained show the identified fungi, in order of frequency to be Aspergillums niger, Rhizopu spp, Mucor spp, Aspergillus flavus, Aspergillus parasitions, Aspergillus fumigatus, Microsporum canis, Penicillium viridicatum and Fusarium spp. Aspergillus niger occurred on all the species of fish sampled. Barilius spp and chrysichthys auratus longifilis had significantly different ($P<0.05$) higher mean fungal load on their fins orgills. The mean fungal load in the different parts of the body of other species of fish sampled were not significantly different ($p>0.05$). One way analysis of variance was used to compare mean fungal load on the three (3) parts of the body of each species of fish sampled. The study concluded that fungal infestation occurs among fish species in Tagwai Dam and that Aspergillus Spp and other mould fungi can attack fish as does the Saprolegnia.

Bolufawi, J. E. (2000).

Sources and Effects of Effluent on the Water Quality Parameters of River Gadu in Minna

The sources of effluent, physico – chemical parameters, plankton and benthic characteristics, the heavy metals of River Gadu were monitored fortnightly for seven months, March – September 1999. Six sampling stations were located along the river. The results obtained were given statistical analysis. The parameters monitored showed marked variations between different samples, stations and period of sampling. The results

also showed that although the mean values for dissolved oxygen, ammonia – nitrogen, conductivity, hardness and transparency, lead, manganese and zinc showed no significant (P>0.05) variation between the stations, significant difference (P<0.05) were observed in temperature, biochemical oxygen demand, Nitrate – nitrogen, phosphate – phosphors, PH and alkalinity. The study also revealed the dominance of the plankton and benthic groups in all the stations. The study therefore recommended among others that to prevent undesirable effect of organic pollution on River Gadu in the future, the inhabitants around the river should be educated on the effect of their sewage on the river.

Falusi, F. M.(2000).

Acute and Chronic Effects of Gramoxone (Paraquat) on Tilapia Zillii Duveniles under Laboratory Conditions

Acute and chronic toxity of gramoxone (paraguat) on Tilapia Zillii juventles were conducted in the laboratory to determine the impact of this herbicide on the environment and non target organisms in the environment where it was used. The static technique was used for the acuta toxity test and and the renewal techniques for the chronic test. Four concentrations of 56mg, 28mg, 14mg/1 and 7mg/ of paraguat in 20 liters of water were used in acute test. Each concentration was triplicated along with two control equaria tanks and ten (10) fishes were placed in each of the tanks. For the chromic test, three concentrations of 5mg/, 10mg/ and 15mg/ of the active ingredient (paraguat) were used in 20 liters of water with each concentration duplicated along with control tanks. Eight fish were placed in each tank. The LC50 values at 24, 48, 72 and 96 hours were 37mg/1, 31.5mg/1, 15.6mg/1 and 15.6mg/1 respectively. The 96 hour LC50 (15.6mg/1) is far lower than

the recommended dosage for field application. The LC50 dosage when applied in the field showed mild effect on weeds but not to the extent of eradicating them. The chronic result showed a dose dependent damage of the gill lamellae. Other symptoms of toxicosis in the exposed fish include air gulping, agitated swimming, hemorrhage of the gills, a period of quiescence and finally death. The growth pattern of exposed fish is negative allometric. Also, a chemical dose – dependent swelling of the bile was observed during the dissection of exposed fish. The study recommended that the recent advancement in the use of paraguat or diguat in controlling aquatic weeds should be discouraged since it is toxic to fish and hence to man too.

Gana, S. D. E. (1999).

Evaluation of the Nutritive and keeping Quality of Smoked Oreochromis Niloticus using a Chacco – Kaolin Smoking Kiln

The parameters used in determining the nutritive and keeping quality of smoked Oreochromis niloticus were the organaleptic evaluation, proximate composition and microbial, stored for a period of six weeks. For the organoleptic evaluation, the result showed that the value ranged with odour as 180 – 3.00, appearance 1.20 – 3.40, texture 2.00 – 3.20, acceptability 0.80 – 3.80 and taste 3.60 – 0.80. The results of proximate composition include moisture 4 – 26.75%, protein 58.54 – 76.92%, lipid 5 – 19.50% and ash content 11.75 – 25%. The values obtained for the microbial count ranges from $279.33 \times 10^3 - 299.00 \times 10^3$. From this analysis, it was revealed that there was a better performance of the charco – kaolin smoking kiln with regard to nutritive and keeping quality of smoked Orechromis niloticus.

Idrisu, A. M. (2001).

The Adoption of Rice-Cum-Fish Farming Technology in Niger State: A Preliminary Survey

The study was carried out as a result of the fact that 85% of the active population of the state are farmers and fishermen. Due to increasing population and the depleting natural resources, there is need for prudent management of the natural resources. Rice – cum – farming is perceived as one of the new technologies to meet this challenge. The study also aimed at identifying the socio – economic implications of introducing rice – cum – farming technique. The results of the survey conducted in some villages, randomly selected along the Niger River Basin showed that majority of the farmers and fishermen signified intentions to adopt the new technology if given the necessary technical assistance such as Agricultural Extension Workers, the farmers' cooperative society, social infrastructural facilities such as power supply, health services, portable water, good roads etc. It was discovered that even though the age – long practices of farming and fishing were profitable under normal conditions, the adoption of the new farming technology will be an added advantage. It was recommended among others that the varieties of rice presently grown be identified and screened to determine their suitability for the proposed technique while the farmers and fishermen should be educated and enlightened about it.

Mbanaso, A. C. (1999).

Toxity of Glyphosate (round up) to Oreochromis Niloticus Fingerlings

Acute and chronic toxity test of Round – up (glyphosate) to fish, oreochromis niloticus, fingerlings was conducted to determine the extent of the effects of this biotechnological products on the environment and non – target organisms in the environment where such products are being used. The lethal concentration (LC50) 96 hours was 16mg/1 which is far lower than the recommended dosage for effective weed control. Also, when LC50 concentration was applied to control weeds in the field, it was not effective. The chronic results showed that fish gill is one of the target organs, since it causes hemorrhage in the fish gills. The study concluded that although the advancement in biotechnology has aided development in agriculture, it is at the expense of degradation of the environment and ecological instability. It is therefore recommended that environmental impact of biotechnological products should always be given priority.

Olayinka, S. O. (2001)

A Preliminary Investigation in to the Possibility of Breeding and Development of Colour Variance in the Guppy for Ornamental Purposes

Two varieties of Guppies (poecilia reticulata) were transported from Lagos to the fisheries farm of the Federal University of Technology, Minna. They were held in glass acquaria for 27 days to acclimatise, shed/absorb eggs or pawn after separation on sexual and variety basis. Series of experiments were conducted on them for a period of five months i.e November 2000 to March 2001. The result of the

experiments revealed that the sex combination ratio and varieties of Guppy are of no significant difference on the number of progeny, number of spawning, sex of the progeny and colour variation of the sampled population progeny, but variety is of significant difference between the colour variation on sex bases. Furthermore, the progeny of the hybrids was discovered to produce more colour variation than the pure varieties and therefore better than the pure varieties in terms of number of colours in spots, patches and patterns. It was recommended that students, investors and individuals should go into production of ornamental fish particularly Gupp since the production cost is low and yield high profit among than others.

Onyejiaka, C. I. (2001).

Nutritional Evaluation of Smoked Fish Obtained from Different Markets in the Federal Capital Territory (F.C.T), Abuja, Nigeria

The researcher collected samples of smoked fish from Wuse and Gwagwalada markets. The parameters used were the moisture, crude protein, lipid, ash, TVC and FFA contents of the fish which were chemically analyzed. The results were subjected to analysis of variance (ANOVA) to test for significant difference between the four smoked species obtained from the two markets. It was discovered that there was no significant difference ($P>0.05$) in their moisture, lipid, TVC and FFA contents while there was a significant difference ($P<0.05$) in their crude protein and ash content. It was recommended, among others that there is need by researchers and government to provide a means of improving on the existing methods of smoking fish and handling procedures for smoked fish.

Salihu, H. K. (1999).

A study of Socio – Economic Impact of Marketing of Fish and Fishery Products in Niger State

The study discovers that marketing of fish and fishery products offers employment to a large number of people in the form of fishing, mongering or retailing etc. Fishery products being sold in Niger State range from fresh, iced, cured, fried and even canned fish. Marketing of fish takes place in designated parts of primary or secondary markets in major towns of the state which operate either on daily or periodic bases. Both men and women are actively engaged in the business while consumers buy only a small stock for immediate consumption. Two way channels of marketing were discovered – producer – consumer and producer – middlemen - retailers – consumers. Consumers' preference showed that one species, clarias gariepinus is preferred to others. Problems associated to fish marketing such as infestation by parasites, contamination due to poor handling and processing and lack of adequate capital were identified. The study therefore recommended among others that cooperative society by fish marketers to be formed to facilitate recognition by government and other organizations. This could provide credit facility and improved storage facilities and processing techniques to increase financial base and decrease loss.

Shekari, C. (2001).

Biodiversity of Fishes of Shiroro Lake Area, Niger State, Nigeria

This research was conducted over a 3 – month's period. Bi – weekly sampling of fishes was carried out with the local fisherman who served as the main source of the fish samples.

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The fishes were brought from different points of the lake. The relative abundance, joint affinity and species and generic diversity of the fishes were analyzed. It was discovered that Shiroro lake harbors various forms of fish species, some occurring in large numbers. However the lake was found to be undergoing attrition as a result of human population explosion, over – fishing, deforestation and pollution of the waters which if not checked will lead to losing a lot of fish species which serve as one of the major sources of animal protein. It was therefore recommended that a practical method – frame survey be employed to collaborate catch statistics so as to provide an effective database for the development of a comprehensive conservation programme.

Tsado, S. A. (2001).

A Survival and Growth Studies of Artificially Produced Clarias Gariepinus Larvae Fed Live and Frozen Zooplankton (Daphnia)

Mixed Zooplankton was sampled from Tagwai Dam with 0.2m diameter 200 plankton net. Microscopic examination of the 200 plankton samples showed three representatives in the following frequency of their occurrence, Cladoceran (Daphnia)> cope poda (cldops)< Rotifers. The cladoceran (Daphnids) were isolated attaining approximately 90% purity using repeated subculture method. Preliminary investigation on Daphnia with poultry droppings and NPK fertilizer in transparent bottles showed that poultry droppings were best for the mass culture. The Daphnids attain peak population between day 7 and 10. At the end of the experiment, fish larvae fed with life Daphnia showed greater mean weight and mean total length than their counter parts fed frozen Daphnia. The study also revealed that there was a marked significant difference

(P<0.05) in the survival rates among the treatments. The study concluded that frozen zooplankton (Daphnia) does not encourage survival and growth of Clarias gariepinus, larvae for the first 10 days. It could however be used to supplement life zooplankton after the first 10 days of culture. It was recommended among others that the poultry droppings to mass culture Daphnia be used since it is cheaper to obtain locally.

Department of Soil Science

Abubakar, A. (2003)

Effect of Nitrogen, Phosphorus and Moisture Stress on Early Growth and Establishment of some Multi Purpose Tree Species

The study investigated the effects of nitrogen phosphorous and moisture stress on some agro forestry tree species. This was done using two green house studies of South Guinea Savanna and Sudan Savanna in Minna and Katsina respectively. These were exposed to different levels of the chemical (nitrogen, phosphorous and moisture). The result revealed that the tree species of Minna site responded more to the treatments than the one at Katsina site. Based on the results, the research recommended that a combination of the chemicals – nitrogen, phosphorous and moisture be used in order to get a good establishment of the tree seedings.

Eze, P. C. (2000).

Infiltrations Rates of Soils as Influenced by Land Use Management in Nigerian Guinea Savanna

The use of a double – ring infiltrometer was employed to evaluate the infiltration characteristics of soils of two sites (Gidan – Kwano and Shintako) under two land use practices (fallow and cultivated soils) in Minna area in the Southern Guinea Savanna zone of Nigeria. Some infiltration related soil physical characteristics were also studied in the same sites. Land use practice significantly affected volumetric water contents in the Shintako site only. Cultivated soil had significantly higher volumetric water content (17.46%) than the

soil under fallow (16.14%). However in Gidean – kwano site, the influence of land use on volumetric water content was not significant. Other factors that significantly affected infiltration rate in the current study were total porosity, micro – porosity and soil profile characteristics.

Uzoma, O. A. (2000).

Response of Cowpea Breeding Lines to Phosphorus and Bradyrhizobial Inoculation in Low Phosphorus (p) Soil of Nigeria's Southern Guinea Savanna

Fifty six (56) cowpea lines of different maturity groups obtained from Grain Legume Improvement Program, IITA, and Ibadan were screened in a pot experiment for good growth and modulation in a low P soil. It was discovered that cowpea lines exhibited large differences in growth, N and P accumulation and N_2 fixation. The cowpea lines were also observed to differ widely in their dependence on added P or inoculation for dry matter production, grain yield and N_2 fixation. Line 90k – 284 – 2 which did not respond to P or inoculation, produced the largest grains yield and also had the highest proportion of N derived from fixation. This result therefore, reinforced the need for the intensification of the breading program to identify and select high yielding cowpea lines in low P soils.

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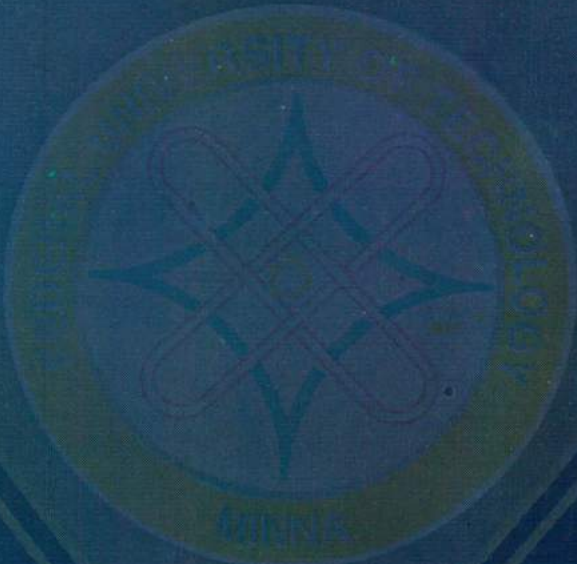# Author Index

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