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Dear Stakeholders, Below are abstracts from the Journal of Environmental Sustainability Advancement Research Volume 6 published by Chuka University. For full articles, contact the Editor in-Chief using contacts provided below. Thank you. Editor in-Chief

APPROPRIATENESS OF EXPLICIT TEACHING METHODS ON LEARNERS' ACHIEVEMENT IN KISWAHILI COMPOSITION WRITING

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ABSTRACT

Effective use of pedagogical methods influences learners' achievement. While appropriate methods enhance learner achievement; inappropriate methods inhibit knowledge acquisition, retention and application. Though many studies have focused on general Kiswahili performance, the linkage between explicit pedagogical methods and learners' achievement in Kiswahili composition writing has been largely unexplored. The study employed quasi experimental design with experimental and control school respectively. Primary data was obtained from 250 Form One students and 7 Kiswahili teachers respectively from Garissa County. A mixture of probability and non-probability sampling procedures were used to select learners and teachers for inclusion. Questionnaires observation schedule were used. The study found that explicit methods were rated higher in control school with a mean of 3.75 compared to a mean of 3.22 in experimental school. However, question and answer was highly rated in teaching *ratiba* and *insha za mdokezo* in both experimental and control schools respectively. A p value of 0.919 in the experimental school indicated that there was no significant relationship between the variables while a p value of 0.007 in the control school meant that there was a significant linear relationship between the variables. The study recommends that Kiswahili teachers need to be empowered with more pedagogical skills so as to effectively and appropriately apply explicit methods to teach various Kiswahili compositions.

Keywords: Pedagogical methods, Explicit methods, Conventional methods, Competence, Pre-test, Post-test.

GENOTYPIC RESPONSE IN RICE DURING THE REPRODUCTIVE PHASE UNDER WATER STRESS AND NON-WATER STRESS CONDITIONS

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ABSTRACT

Drought stress during the reproductive stage is a major constraint limiting rice production and productivity in rainfed upland and lowland ecologies especially in sub-Saharan Africa. This study was conducted to determine response of rice landraces and cultivated rice to water stress at reproductive growth stage, to identify sources of drought tolerance among selected rice landraces grown in coastal region of Kenya and to identify traits contributing to high grain yield under water stress conditions. Fifteen rice genotypes were evaluated in a randomized complete block design with four replications under water stress and non-water stress conditions in a steel and wire mesh screen house where weather conditions were uncontrolled. Data collection included canopy temperature, relative leaf water content, leaf rolling, and leaf drying, days to 50% flowering, spikelet fertility and grain yield per plant. The study revealed that there were no significant differences among rice genotypes for all the physiological traits measured under non-water stress conditions. However, under water stress conditions, genotypes varied significantly ($P \leq 0.001$) for all the physiological traits and in days to 50% flowering, spikelet fertility and grain yield per plant. The intensity of stress observed in this study was moderate as revealed by a relative yield reduction of 57%. Based

on a selection index ranking, two local cultivars, *Shingo la Mjakazi* and *Kitumbo* were found to be moderately water stress tolerant and therefore potential sources of drought tolerance trait. All the other landraces were identified as water deficit susceptible. Under water stress conditions spikelet fertility showed a strong positive correlated with grain yield (0.62**) and was the most important contributor to higher grain yield and may be targeted to indirectly select for grain yield under water deficit conditions

Keywords: Drought tolerance, Landraces, Selection index, Spikelet fertility

SEDENTARY LIFESTYLE PREVALENCE AMONG WORKERS IN KENYA AGRICULTURAL AND LIVESTOCK RESEARCH ORGANIZATION IN KENYA

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ABSTRACT

People who spend too much time being sedentary are more likely to develop musculoskeletal disorders and other non-communicable diseases (NCDs). This health risk is likely to increase with increasing sedentary office setting and lifestyle. In Kenya, the sedentary lifestyle is on the increase while its baseline data has not been documented appropriately. This study investigated sedentary lifestyle prevalence among workers in seven selected institutes within Kenya Agricultural and Livestock Research Organisation (KALRO). The study concentrated on a population of 820 office and laboratory workers in seven KALRO institutes located in the Nairobi Metropolitan. The sample size (n= 96), was calculated using Daniel's formula for prevalence studies. A Cross-sectional survey was employed on respondents and questionnaires administered. Waist to height ratio (WHtR) and waist circumference (WC) was measured using a stretch-resistant tape in accordance with WHO, 2008 guidelines. The WHtR (>0.5) revealed that prevalence of overweight and central obesity was high in females, (92.6%) than in males (88%) while (90.38%) was for combined male and female respondents. Factors influencing sedentary lifestyle most of which were outside the workplace setting were: use of motorized transport (73%) which increased with social-economic status; screen time (64.7%); reliance on house help for domestic chores (56.5%) and occupational sedentary (78.4%) with p>0.5 for sitting for office and laboratory workers. None of the sampled institutes had invested in ergonomic chairs, policies or programs for NCDs screening and management. The study concluded that there was a high prevalence of sedentary lifestyle among KALRO employees in the selected institutes. These findings provide a basis for management in KALRO to encourage physical activity among its workers by intervening at individual (reduction of television viewing and overall volume of unbroken sitting time); environmental (introducing active workstation where they live, work); and policy level (allowing regular desk breaks, introduction of standing/walking meetings, guidelines on how long a sitting meeting should last).

Keywords: KALRO, musculoskeletal, obesity, policies, prevalence, sedentary.

ON-FARM EVALUATION OF NEW GREEN GRAM VARIETIES IN THE ARID AND SEMI-ARID AREAS OF EASTERN KENYA

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ABSTRACT

Green gram (*Vigna radiata* (L) Wilczek) is an important staple crop and a source of livelihood to most small scale farmers in the semi-arid of eastern Kenya. The current production of green grams cannot meet its demand in the local and export markets. The available green gram varieties are low yielding, have a small grain size and are late maturing. Farmer's participatory field experiments were conducted in Meru and Tharaka-Nithi Counties to evaluate the adaptability and acceptability of three new green gram varieties. The trials were laid in a Randomized Complete Block Design with four plots replicated thrice. The objectives were to evaluate the green gram varieties for yield under farmer's management, assess the farmers' preferences and test their adaptability in the region. The treatments comprised of green gram varieties; Karembo, Ndengu tosha, Ndengu Biashara and N26 (control). The varieties were planted in plots of 5m x 5m at a spacing of 60 cm x 20 cm and DAP was used as a source of nutrients. The

parameters evaluated were grain yield, number of pods per plant and number of seeds per pod. The findings indicated that in Tharaka-Nithi County, Karemba variety was highest in yields with 1.171 t ha^{-1} , an increase of 74.5% above the control (0.671 t ha^{-1}). Biashara variety followed with 1.02 t ha^{-1} , an increase of 34.4% above the control (0.671 t ha^{-1}). In Meru County, Biashara variety gave the highest yields of 1.99 t ha^{-1} , an increase of 362.8% above the control (0.43 t ha^{-1}). Karemba variety followed with 1.47 t ha^{-1} , an increase of 241.9% above the local check (0.43 t ha^{-1}). The local check (N26) had a grain yield of 0.43 t ha^{-1} . There was a significant difference ($p < 0.05$) among the four green gram varieties on grain yield in Meru County. There was a similar trend for both the number of seeds per pod and number of pods per plant where Ndengu Tosha produced the most seeds per pod and pods per plant in both Tharaka-Nithi and Meru counties with a mean of 15.4 and 18.4 seeds per pod and 25 and 27.6 pods per plant respectively. This was followed by Biashara that produced a mean of 11 seeds per pod and 22.2 pods per plant in Tharaka-nithi and 13.4 seeds per pod 26.6 pods per plant in Meru County. The local variety N26 produced the least number of pods per plant in both sites having a mean of 5.6 seeds per pod and 10.4 pods per plant in Tharaka-nithi and 4.4 seeds per pod, 16.4 pods per plant in Meru County. During the evaluation, the farmers set their criteria for evaluating the performance of the varieties. They used different criteria to evaluate and assess the green gram varieties. The major attributes used in the evaluation included pest and disease tolerance, high grain yield and non-shattering ability. The attributes were ranked through pairwise ranking and the first four were used to rank the varieties in order of preference. Ndengu Biashara ranked highest because of its early maturity and high yields, followed by Karemba and Tosha. The results revealed that adoption of these varieties would increase yields and in turn increase income for the farmers. It would also increase the diversity of varieties in the region. Seed bulking would be an important intervention in dissemination of the new seeds.

Keywords: Green gram varieties, evaluation, farmer's perception, adoption

INTERNAL FINANCING AND SHAREHOLDER WEALTH MAXIMIZATION OF FIRMS LISTED AT THE NAIROBI SECURITIES EXCHANGE

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ABSTRACT

Internal funds offer firms a unique financing alternative for investments. When a firm retains earnings, it conserves cash flows that can be deployed into available investment opportunities. Similarly, internally generated finances ought to be less costly than externally sourced funds from issuing ordinary shares. When finances are raised internally, firms avoid floatation cost and hence can reduce the overall cost of capital that is used to discount the expected earnings of such firms and consequently earn higher market value. On the contrast, when a firm employs retained earnings in financing, it may reduce the amount available to pay dividends. A reduction in dividends may communicate information to shareholders that the firm's future growth prospects are dwindling. This brings forth information asymmetry to investors and increase uncertainty that could lead to decline in firm market valuation. In the same vein, managers may pursue their own interests using the excess cash resulting from retained earnings and shrink shareholders value. This study set out to explore the effect of internal financing on shareholder wealth maximization of firms listed at the Nairobi Securities Exchange. The study was grounded on pecking order theory, free cash flow theory and information asymmetry hypothesis. The study population consisted of 65 listed firms that yielded 440 firm-year study observations from 2011 to 2018. Panel data analysis was applied to estimate the random effect and fixed regression of internal financing on shareholder wealth maximization. Further, a generalized least square estimator was adopted in attempt to confirm robustness of results. Tests of homoscedasticity and serial correlation as well as the Hausman specification tests were undertaken. The panel data analysis based on random effect model and the generalized least squares estimation findings revealed that internal financing has a negative effect on shareholder wealth. Nevertheless, regardless of the econometric approach employed in the estimation, consistent findings are obtained a sign that the results are robust. The implication of the findings for policy and practice is that internal financing erodes shareholders' wealth.

Keywords: Listed Firms, Panel Data Regression, Random Effects, Generalized Least Squares

EFFECT OF CORPORATE TAX PLANNING ON FINANCIAL PERFORMANCE OF FIRMS LISTED AT NAIROBI SECURITIES EXCHANGE, KENYA

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ABSTRACT

Corporate tax planning relates to the utilization of the loopholes in the tax system to reduce tax liability. According to the Tax Justice Network-Africa, Kenya's corporate sector leads Africa in tax avoidance with the tax avoided each year being estimated at Ksh 106 billion. However, despite enormous tax savings generated through tax planning, there exists mixed evidence about the effect of corporate tax planning on financial performance of firms. This study therefore sought to evaluate the effect of corporate tax planning on financial performance of firms listed at the Nairobi Securities Exchange. The specific objectives were to analyze the effect of corporate tax compliance, capital investment allowances and debt tax shield on the financial performance of firms listed at the Nairobi Securities Exchange. The study used a casual research design to establish the effect of corporate tax planning on financial performance of firms. The target population was the 64 firms listed at the NSE and purposive sampling was used to select 55 firms that had complete data and that were consistently listed within the period of study 2010 to 2015. Secondary data was collected using a checklist from the NSE website, individual company's website and from NSE reports. A multiple regression analysis was used to analyze the cause-effect relationship between dependent variable and independent variables. Data analysis was done with aid of SPSS version 21.0. T-test and F-test were used to test the significance of regression coefficients and overall significance of the model respectively at 5% significance level. The study established statistically significant positive effect of tax compliance and capital investment allowances on return on assets with coefficients of 0.238 and 0.076, and P-values of $0.009 < 0.05$ and $0.042 < 0.05$ respectively. Further, it was established that debt tax shield had a negative significant effect on return on assets with a coefficient of -0.142 and p-value of $0.038 < 0.05$. The study concluded that corporate tax planning has a significant effect on financial performance of NSE listed firms and recommends that firms should increase their tax compliance, increase expenditure that qualifies for capital investment allowances and reduce use of debt as the cost of debt may have negative effect on return on assets. The findings of this study would be of importance to policy makers such as the Nairobi Securities Exchange, capital market authority and national treasury in formulating policies on tax planning activities and more importantly it would guide management in decided on their tax planning practices and the expected benefits

Keywords: Tax, performance, corporate tax compliance, capital investment allowances, debt tax shield.

DETERMINANTS OF CHILD SEX EXPLOITATION BY TOURISTS IN KENYA: A CASE STUDY OF MOMBASA NORTH COAST

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ABSTRACT

Kenya is synonymous with Safari destination in tourism circles internationally because of its main two products namely; wildlife and Coastal beach. However, cultural and sex tourism products are becoming prevalent to tourist, such that the tourism industry is facing different challenges towards child sex exploitation by tourists (CSET) in Kenya. The purpose of this research was to find the determinants of CSET in Mombasa North Coast, Kenya (MNCK). The research adopted descriptive design. The target population was 108,778 (County government of Kilifi and Mombasa, 2017) children involved in sex tourism industry and sample size of 384 children were selected using Krejcie and Morgan Table (1970). The study used both purposive sampling and stratification methods in sampling the children. Convenient method was used to select 22 tourist hotels out of 44 tourist hotels (KAHC, 2018) in MNCK. The study used both primary and secondary data which was collected by use of questionnaire survey and

direct observation. The analyzing of qualitative data was done by using a presented format in thematic content analysis. The quantitative data was analyzed by use of descriptive and inferential statistics through the help of statistical packages for social sciences (SPSS) whereby chi-square (χ^2), ANOVA and descriptive tests were performed. The research found out that the growth of tourism sector in MNCK has no proper controls especially those affecting children aged between 6 and 18 who make up 96.8% majority, which revealed that CSET is widespread at the MNCK tourist circuit. The study concluded that poverty (47.2%) is the major factor leading to the widespread of CSET in MNCK followed by peer pressure, illiteracy, modern technology and finally culture. Since, the CSET affects both the community and the children through their socio-economic life, the government through the tourism ministry has to strengthen the legal framework to be strictly followed by all stakeholders in the tourism sector in order to curb such illegal practices in Kenya, MNCK tourist circuit.

Keywords: Children, Sex, Tourists, Tourism, Determinants, Mombasa North Coast

EFFECTIVENESS OF MONETARY POLICY INTERVENTION ON EXCHANGE RATE VOLATILITY IN KENYA

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ABSTRACT

Despite the monetary policy intervention in foreign exchange markets by Central bank of Kenya to stabilize the exchange rate and to reverse the growth in the country's trade deficit through increased competition, Kenya has been facing wide fluctuations in US dollar to Kenya shilling exchange rates since the adoption of a floating exchange rate system in 1993 resulting to increased exchange rate risk. Other than the high volatility of exchange rate, there has been a continuous depreciation of Kenya shilling to US dollar. Depreciation of home currency decreases return on investment when investing internationally. This study aimed at evaluating the effectiveness of monetary policy on exchange rate volatility in Kenya using GARCH (1, 1) model. The specific objectives of the study were; to determine the effectiveness of net foreign exchange intervention, 91-day Treasury bill rate, Central bank rate and inflation on exchange rate volatility in Kenya. A descriptive longitudinal time series research design was used. Monetary policy intervention was found to be effective in reducing exchange rate volatility by use of foreign exchange intervention and Treasury bill rate. A unit decrease in 91-day Treasury bill rate decreases the exchange rate volatility by 2.5790 units while a unit increase in foreign exchange intervention decreases the volatility by 0.3042 units. Central bank rate has no effect on volatility. The finding of this study is of great significance to monetary policy makers and society at large. Since non-sterilized intervention was found to result into monetary policy dilemma, policy makers should strive for a policy mix that will ensure stable exchange rates by stemming out any excessive volatility in the exchange rate to avoid further depreciation and fluctuation on exchange rate. A combination of a stable exchange rate environment and a competitive currency will attract investment, increase aggregate output and expand country's economic prosperities.

Keywords: Foreign Exchange Rate, Foreign Exchange Intervention, Central Bank Rate, 91day Treasury Bill rate.

ASSESSMENT OF HUMAN RESOURCE CAPACITY BUILDING INTERVENTIONS TO SUPPORT FOOD SECURITY AND NUTRITION IN KENYA

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ABSTRACT

Governments have the cardinal responsibility to ensure food security and nutritional provisions to its citizens since this has direct effects on the social and economic stability of a country. Food security is a measure of the existence of physical and economic access to enough, safe and nutritious food to meet dietary needs. The four pillars of food security include availability, ease of access, proper utilization, and long-term stability. There has been a lot of research on food security, but there is scarce empirical evidence on assessment of the ability of the human resource to support the delivery of the food security agenda. The paper is based on a study that assessed knowledge, skills

and competency gaps and identified interventions needed to support the achievement of the big four agenda on food security and nutrition in Kenya was assessed. The work environment factors that affect employee capacity to deliver were delineated and the extent to which the legal, policy and regulatory framework on human resource capacity building supports the achievement of food security and nutrition in Kenya. The descriptive research design targeted a purposively sample of 8 counties with 222 respondents who completed a self-administered questionnaire. The SPSS software generated descriptive statistics and graphical representations, while the qualitative data was analyzed to reveal emerging thematic issues. The study concluded that knowledge skills, competencies; policies, legal and regulatory framework and the work environment all had a positive effect on the ability to deliver the food security and nutrition mandate. The government should develop policies that support retooling and reskilling of employees in value addition, climate smart agriculture, post-harvest management and resource mobilization.

Keywords: Capacity building, Knowledge, Skills and competencies, Food security and nutrition

MEDIA PARTICIPATION AND CULTURAL NORMS AROUND MUGAMBO JWETU FM COMMUNITY MULTIMEDIA CENTRE IN TIGANIA WEST, MERU, KENYA

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ABSTRACT

Community media have been lauded for the opportunity they provide to enhance participation and therefore democratic culture. In Kenya, several community radio stations have been founded partly under this logic since 2004. As of 2017, there were about 25 operational community radio stations. However, exactly what participation consists of or what bottlenecks participation faces is not extensively laid out in either the country's legislation or the stations' best practices. This paper explores the daily interactions of a Kenyan 'community radio community' with the programmes of a radio station in their midst. It examines the media rituals at different times of the day by various sections of the community in relation to the content of the station, Mugambo Jwetu FM. Through this, social norms that determine participation, and the new social formations that occur through participation, are revealed. The data used are drawn from field research conducted in 2014 and 2015 in the context of a broader research project spanning 2014 to 2017. The project examined the roles and reception of community radio in the Kenyan media landscape and found that among other roles, community radio is a contested performance site for diverse social identities and that participation is subject to cultural norms.

Keywords: Participation; community; speech communities; radio; audiences; community radio; listenership; culture

EFFECT OF TRANSPORT INFRASTRUCTURE INVESTMENT ON ECONOMIC GROWTH IN KENYA

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ABSTRACT

Transport infrastructure is central to the attainment of sustainable economic growth rate of a country. Due to this reason, the Kenyan government has shown commitment to improve transport infrastructure in the recent past by spending 4.5% of Gross Domestic Product on the transport and infrastructure sector. However, this expenditure is below the global spending threshold of 14% of GDP to the sector and it signifies underinvestment of transport infrastructure that has resulted into poor transport system which is the main bottleneck that not only limits realization of the 10% economic growth rate but also the socio-economic development in the country. While based on unbalanced growth theory, this paper analyzed the effect of transport infrastructure investment on economic growth in Kenya for the period 1990 to 2017. A causal research design was used to establish the cause – effect relationship among the variables of the study. The Error Correction Model was estimated using Ordinary Least Squares regression technique. Granger causality test revealed a unidirectional causality running from economic growth to transport infrastructure investment thus supporting Wagner law. Co-integration test confirmed existence of long run economic relationship among the study variables. The paper found that transport infrastructure investment has a positive coefficient of 0.1120 and statistically significant effect on economic growth with a p-value of $0.0263 < 0.05$. This means that a unit increase in transport infrastructure investment increases economic growth by 11.20% other factors remaining the same. The paper also established that public investment has positive and

statistically significant effect on economic growth while private investment has negative and statistically insignificant effect on economic growth. Interestingly, labour force had negative and significant effect on economic growth. Therefore, the paper concluded that transport infrastructure investment impacts economic growth in Kenya positively and significantly. Conclusively, the paper recommends the government to increase its annual budget allocation to the transport and infrastructure sector since this will enable development of new integrated transport infrastructure and at the same time allow for rehabilitation and maintenance of existing transport infrastructure facilities. This will go a long way in increasing trade and mobility that will lead to high productivity that ultimately propels the economy into sustainable economic growth.

Keywords: Infrastructure, transport infrastructure, investment, economic growth, Error Correction Model, Kenya

EMERGING TRENDS AND PERSISTENCE OF INTER-ETHNIC CONFLICTS IN KENYA

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ABSTRACT

Ethnic conflicts remain the biggest setback to the development of many African nations today, Kenya included. This study analysed the emerging trends and reasons for the persistence of inter-ethnic conflicts in Kenya. It was undertaken in the context of the Presbyterian Church of East Africa (PCEA) and was done in inter-ethnic conflict prone Counties in Kenya including Nakuru, Eldoret, Laikipia and Mombasa. The study population was 1,624,345 PCEA members drawn from Nakuru west, Nakuru East, Njoro, Elburgon, Laikipia, Eldoret and Mombasa Presbyteries which are perceived as inter-ethnic conflicts dominant. A sample size of 384 respondents obtained through random sampling was selected from the presbyteries in the study locale. The study adopted a descriptive survey research design employing mixed methods of data collection. The instruments for data collection were questionnaires for the Church elders and members, structured interview guide for Church ministers and Focus Group Discussions (FGDs) for victims. The study established that the major reasons for the persistence of inter-ethnic conflicts in Kenya are radicalization, economic imperialism, elite manipulation, deep-rooted cultural practices and language prejudices. These are the vices that must be eradicated if at all the inter-ethnic conflicts which have been the major hiccups to the socio-political and economic development of Kenya will be effectively addressed.

Keywords: Kenya; inter-ethnic conflicts, Presbyterian Church of East Africa

YOUTH MARGINALIZATION AND SECURITY IN MANDERA TRIANGLE, KENYA

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ABSTRACT

Marginalization is as a process by which a group or individual is denied access to important positions and symbols of economic, religious, or political power within any society a marginal group may actually constitute a numerical majority and should perhaps be distinguished from a minority group, which may be small in numbers, but has access to political or economic power. Youth radicalization in Mandera triangle, courtesy of marginalization has led to insecurity resulting in loss of lives, destruction of property and non-local workers seeking for transfer to other parts of the country. In the African context, socio-economic issues are key in radicalization processes. There is scanty literature on the correlation between marginalization and security in a developing country. The study investigated effect of marginalization on security situation in Mandera triangle. Data was obtained from all the six sub-counties, Mandera South, Mandera East, Mandera North, Banisa, Mandera West and Lafey. Descriptive survey design was used in the study. Snowball sampling technique was used to identify 100 respondents from a target population of 200 youth. The sample size was distributed proportionately among the six sub-counties. Three key informants were purposively selected from institutions. A structured questionnaire was used to collect data. Descriptive and inferential statistics was used to analysis data. Statistical package for social sciences (SPSS Version 22) was used in the analysis of data. The study concludes that marginalization ($\beta = -0.400, P < 0.05$) had positive significant effect on security in Mandera triangle. The study concluded that marginalization negatively affects security. From the

conclusion, the study recommended that to address insecurity in Mandera, marginalization of the youth should be addressed at managerial and policy levels. The findings may inform the security sector in formulation of policies and laws in reducing marginalization and improving the security situation in Mandera Triangle

Keywords: Marginalization, Radicalization, Security, Insecurity, Mandera Triangle, Kenya

SPATIO-TEMPORAL INTEGRATION OF PERIODIC MARKETS IN THARAKA-NITHI COUNTY, KENYA

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ABSTRACT

The study of spatial and temporal integration of periodic markets in Tharaka-Nithi County, Kenya was conducted between December, 2017 and April, 2018. The main objective of the study was to determine the distribution and integration of periodic markets in Tharaka-Nithi County. Descriptive cross-sectional research design was used in this study. The target population was 365,330 and the sample size was 384 respondents. Stratified random sampling technique was used to select the study sample. Respondents who include traders and buyers in each periodic market were determined and a sample of each market proportionately obtained. Data used in this study was obtained from topographical maps, questionnaires, archival records and information provided by market masters and fee collectors. The location and coordinates of markets were attained by use of a GPS (Germin-6 model). Data was analyzed using the Statistical Package for Social Sciences version 22. Distribution of markets analyzed using the nearest neighbor method yielded a Z-score of 10.183 indicating that distribution of periodic markets was regular. Spatio-integration of periodic markets was tested using Pearson product-moment correlation coefficients. The study established that there was a positive correlation between the number of markets and market days ($r^2=0.294$; $P>0.05$). Results of this study indicate that the distribution of periodic markets in Tharaka-Nithi County is inconsistent with the rapid growth of population. Distribution of the periodic markets has resulted to unequal distribution of commodities. This study will help to the County government and policy makers to decide suitable areas for establishment of new markets as well as periodicity. To enhance the contribution of periodic markets in promoting food security, the study recommends both institutional and infrastructural interventions that include improving the layout and quality of physical facilities in the market and road improvement and the construction of new feeder roads. Good rural transport network will ensure efficient flow of goods especially from surplus regions to deficit regions.

Keywords: Spatial, Temporal, Integration, Periodic Markets, Distribution

FEMALE GENITAL MUTILATION EFFECTS ON PHYSICAL HEALTH OF THE GIRL CHILD AMONG AMERU COMMUNITY OF KENYA

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ABSTRACT

Since the ban of Female Genital Mutilation (FGM) in Kenya, the Ameru community continues the practice in spite of the associated stigma and adverse effects on the initiates. Basically FGM involves the partial removal, total removal or alteration of girls' or women's genitalia which in effect disorients the initiates' physical lives. This study sought to determine the effects of FGM on the girl child's physical health among the Ameru community of Kenya. The study employed the descriptive survey research design on a sample comprising of 408 girls who had undergone the 'cut', 48 health workers, 3 social workers and 30 Focus Group Discussion members selected by the use of snow ball sampling and purposive sampling techniques. Data was collected using questionnaires, interview schedules and Focus Group Discussion schedules. The data was analyzed using Statistical Package for Social Sciences version 17.0. Descriptive statistics were used to analyze the data whose findings indicated that FGM negatively affected the physical health of the girl child and in some instances resulted in death. Thus, it was recommended that the government and non-governmental organizations should enhance interventions on physical health effects of FGM to alleviate the sufferings of the girl child among the Ameru community.

Keywords: Cultural practices, Female circumcision, Gender-based mutilation, Initiate stigma, Rite of passage

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Table 1: Treatments used for evaluation of performance of grain amaranth

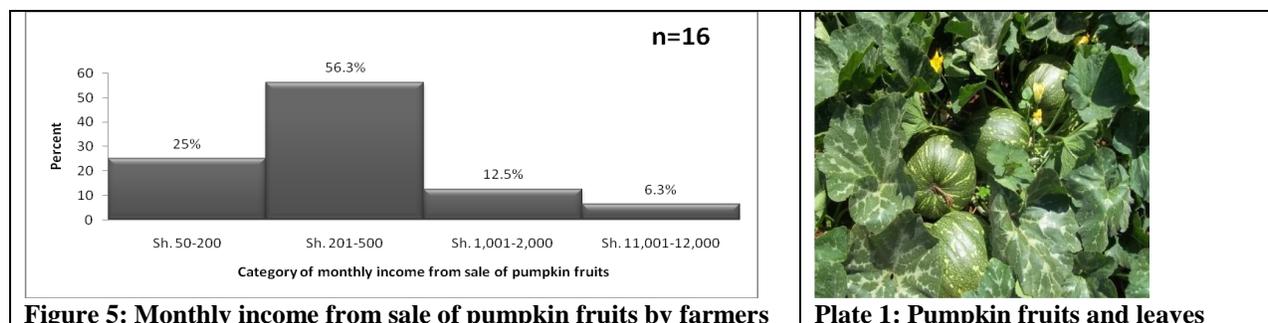
Treatment	Inter-row spacing (cm)	Fertilizer applied (units ha ⁻¹)	Number of plants ha ⁻¹
S1F1	90	0	37,037
S2F1	75	0	44,444
S1F2	90	5 tons FYM	37,037
S2F2	75	5 tons FYM	44,444
S1F3	90	10 tons FYM	37,037
S2F3	75	10 tons FYM	44,444
S1F4	90	20 kg P ₂ O ₅	37,037
S2F4	75	20 kg P ₂ O ₅	44,444

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 - 1) Ekesa, B.N. 2009. Agricultural biodiversity for food and nutrient security: The Kenyan perspective. *International Journal of Biodiversity and Conservation*, 1(7):208-214.
 - 2) Siddiqui, Z.A. and Akhtar, M.S. 2007. Biocontrol of chickpea root-rot disease complex with phosphate-solubilising microbes. *Journal of Plant Pathology*, 89(1):67-77.

- 3) Oswell, F.N., Rufaro, M.M., Susan, K. and Arnold, B.M. 2007. Indigenous knowledge of the traditional vegetable pumpkin (*Cucurbita maxima/moschata*) from Zimbabwe. *African Journal of Agricultural Research*, 2(12):649-655.
- Book:** Ochapa, C.O. 1984. *Introduction to Tropical Soil Science*. Macmillan Intermediate Agriculture Series. Macmillan Education Ltd, London, UK.
- Chapter in a book:** Kauffman, C.S. and L.E. Weber. 1990. Grain amaranth. p. 127-139. *In: J. Janick and J.E. Simon (Eds.). Advances in New Crops*. Timber Press, Portland, Oregon, USA.
- Proceedings:** Chweya, A.J. 1997. Genetic enhancement of indigenous vegetables in Kenya, p. 90-99. *In: L. Guarino (Ed.). Proceedings of IPGRI International Workshop on Genetic Resources of Traditional Vegetables in Africa: Conservation and Use*. 29th-31st August, 1995, ICRAF Headquarters, Nairobi, Kenya.
- Thesis/dissertation:** Wekesa, F.S. 2010. Socio-economic analysis of production and response of grain amaranth (*Amaranthus caudatus* L.) to fertilizer application and intercropping with maize or beans in Kisumu West district, Kenya. Master of Science Thesis, University of Nairobi, Kenya.

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