Impact of Tertiary Education Institutions on Rural Agricultural Communities in Sierra Leone

S.B. Massaquoi, F. Tarawally, E. Bangali, J.B.A. Kandeh

ABSTRACT

The tertiary education institutions offering agriculture programmes in Sierra Leone perform the roles of teaching, research and service to communities that are characterized by poverty, food insecurity and lack of basic amenities. Graduates from these institutions work as teachers, extension agents and Agriculture Officers in the communities to implement rural agricultural development. The communities remain underdeveloped even though the institutions continuously produce thousands of graduates in Agriculture every year. The essence of this research is to investigate why the rural agricultural communities in Sierra Leone remain underdeveloped, even though graduates in Agriculture are produced every year and many of them are employed in the rural communities? The design is descriptive. The study generated qualitative and quantitative data. The population is 2,986 subjects comprising heads of departments, deans, students and community people. There were thirteen (13) tertiary education institutions offering agricultural programmes in Sierra Leone. The programmes offered in the four tertiary education institutions investigated were Ph.D., M.Sc., B.Sc., B.Ed. TC, HTC, HND, OND, Short term in-service and several weeks certificate programs. Generally, human, materials and finance resources were available but minimally adequate in all the institutions thereby producing graduates with weak practical skills. The programs offered had moderate impact on the lives of people manifested by varying levels of adequacy, accessibility and affordability of food in the communities. It was concluded that the regions did not have equal distributions of tertiary agricultural institution and that the institutions did not offer equal number and types of programs. However, each region had at least one

Country – Sierra Leone

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tertiary education institution offering agricultural programs which made tertiary agricultural education accessible to people within the region. The resources provided by government were grossly inadequate for the management of tertiary agricultural institutions in the country. Hence inadequate human, (academic staff), Finance (money for satisfactory salary) and material (tractors) resources pose serious challenges to the tertiary institutions nation wide. Tertiary agricultural institutions should equitably be distributed in all the four regions of the country. Government should allocate sufficient funds to all level of agricultural institutions for procurement of material resources to enhance successful implementation of agricultural programmes in rural agricultural communities. Adequate academic, supporting and farm technical staff should be deployed in the institutions. Sufficient funds should be allocated for the management of tertiary education institutions. Agricultural institutions should maintain demonstration farms for practical purposes.

**Key Words:** Tertiary Education Institutions; Agricultural Programs; Impact; Relevance; Challenges.

**INTRODUCTION**

**Agriculture in Sub-Saharan Africa**

Agriculture in Sub-Saharan Africa (SSA) accounts for about 40% of GDP and 70% of employment (Ngongi , 2000), and yet SSA is the one region of the world where the food supply situation continues to worsen as population grows. In the rest of the world, food supply has been increasing faster than population for a decade or more. The reverse is true for Sub-Saharan Africa.

Africa. Sixteen of the eighteen most under nourished countries in the world are in Africa (FAO, 2005). Sub-Saharan Africa has one of the highest global hunger indices (Van Grebmer el al., 2010) which contribute to high child mortality. This situation is reportedly due to limited government effectiveness and political instability, among other reasons (Ngongi, 2000).

Ngongi, (2000) further argues that strong Agricultural Education and training systems are necessary for providing the human
resources to drive development. Agricultural Education and training directly raises agricultural productivity by developing producer capacities and generating human capital for support services (World Bank, 2007). Under and post-graduate training to provide high-level scientists and researchers is an essential part of human capacity improvement in Africa. Skills and knowledge are built at the tertiary education level. Most governments and university research systems in Africa are producing only a trickle of new technologies that can be used by farmers (Eicher, 2006). Investment in Agricultural Education and training enables research, extension and commercial agriculture to generate high income for farmers (Ngongi, 2000). Improving tertiary education systems must therefore be high on Sub-Saharan Africa’s development agenda. Agricultural Education and training was an integral part of the development strategies of countries that expanded their agricultural sectors successfully such as Brazil, India and Malaysia. In order to remain relevant, agricultural training needs the support and participation of all major stakeholders, including farmers and private sectors.

**Sierra Leone Tertiary Institutions and Challenges 1990 - 2012**

Sierra Leone is a small country of 28,000 square miles (74,000 Km³) and lies on the southwest coast of West Africa with a population of five million (National Census Report, 2004).

Tertiary education institutions offering agricultural programs were established since 1964. These include Njala University College (now the Njala University). Milton Margai Training College (now Milton Margai College Education and Technology). Northern Polytechnic, Eastern Polytechnic, PortLoko Teachers College and Freetown Teachers College. There are thirteen (13) tertiary education institutions offering Agricultural Programs in the country.
According to Alie (2002), the educational system of Sierra Leone that attracted several West African students in the colonial and post independence periods was in crisis by the early 1990s due to various reasons including but not limited to poor financial support, inappropriate curricula, the start and intensification of the rebel war, and a dim view of the value of education by the youths. Although rapid progress has been made in the post-war years due to the formation and implementation of new education policies, the education sector is still plagued with multiple challenges. Currently, the major challenges facing the educational institutions in Sierra Leone are: a) Inadequate funding. b). Insufficient academic staff c) Brain drain. d) Insufficient supporting staff. e) Deteriorating Infrastructure, f) Poor Information Communication Technology (ICT) facilities. g) Insufficient supply of water and electricity. h) Poor library and laboratory facilities. h) Increased demand for enrolment. i ) Weak research. j) Sustenance of academic and Supporting Staff.

**Rural Agricultural Community**

Poverty in Africa is predominantly rural. More than 70 percent of the continent’s poor people live in rural areas and depend on agriculture for food and livelihood. In Sub-Saharan Africa, more than 218 Million people live in extreme poverty (United Nations Economic Commission for Africa, 2006). These are predominantly in rural communities. According to Atchoarena, (2006) the current focus on rural development and poverty reduction requires a comprehensive “view of rurality”. Atchoerena, (2006), argues further that rural development is more than agriculture and rural development concerns all those who live in the rural space as well as those in urban areas who have close links with rural activities and people.

After decades of economic stagnation and with the number of chronically malnourished people now reaching 200 Million, African leaders are intensifying efforts to find “sustainable solutions to hunger and poverty”, says former Nigerian President Olusegun
Obasanjo. One of the means this can be accomplished is through rural agricultural development. Rural agricultural development encompasses a range of approaches and activities that aim to improve the welfare and livelihood of people living in rural areas. Rural community development is important in developing countries where a large part of the population is engaged in farming.

Rural community development is a planned intervention to stimulate social change for the explicit purpose of the betterment of the people. The focus of rural community development is on the quality of life, or well being of people residing in sparsely settled areas. This is generally taken to be towns, villages, or non-metropolitan areas.

Crowder et. al., (2000) stated that the most important source of knowledge for agricultural development is the rural people themselves. An understanding of rural people and their production system should be an integral part of an agricultural education programme. This requires that agricultural education institutions play not only an academic role, but also a community development or outreach role that allows them to understand local knowledge and combine it with modern agricultural science. Understanding the contribution that local people can make to solve their own problems is the key to sustainable rural development (Crowder et. al. 2000).

The tertiary education institutions offering agriculture programmes in Sierra Leone perform the roles of teaching, research and service to communities that are characterized by poverty, food insecurity and lack of basic amenities. Graduates from these institutions work as teachers, Extension Agents and Agriculture Officers in the communities to implement rural agricultural development. The communities remain underdeveloped even though the institutions continuously produce thousands of graduates in agriculture every year. The essence of this research is to investigate why the rural agricultural communities in Sierra Leone...
Leone remain underdeveloped, even though graduates in agriculture are produced every year and majority of them are employed in the rural communities?

**Context and Statement of the Problem**

Sierra Leone has a lot of natural and human resources and has invested significantly to set up institutions of higher learning and faculties of agriculture. At present the country can boast of thirteen (13) tertiary education institutions offering agricultural programmes, producing over (300) three hundred graduates every year.

According to Ngongi (2000) universities in Sub-Saharan Africa with Agriculture programmes should provide trained people for agricultural research and development, raise technocrats for agriculture ministries who formulate and guide policies that shape agricultural sectors in their respective countries; conduct research on critical issues that feed into natural development goals, and disseminate technologies to the general public and farming communities to drive development. Between the periods 1990 – 2000, most universities in Africa had not been able to produce graduates who can perform such tasks effectively (World Bank report 2007). One of the current challenges of our tertiary agricultural institutions is how to provide education and training for agricultural graduates, who are innovative, practically oriented and can drive development in rural agricultural communities. It has been contended that older curriculum that concentrated on production agriculture is no longer able to produce educated people who can deal with wider problems of rural development (Maguire, 2000).

For several decades since the attainment of independence, rural agriculture in Sierra Leone has remained underdeveloped despite the role of tertiary education institutions in training the human resource development. This problem has captured the interest of the researchers. Why should the rural agricultural communities in Sierra
Leone remain underdeveloped even though agricultural graduates are produced every year and tertiary agricultural institutions continue to provide invaluable services to the rural agricultural communities on daily basis? Inadequate infrastructure and services in rural areas, weak or no research output from tertiary institutions; Inappropriate programmes, ageing and insufficient number of academic staff, inadequate funding to tertiary institutions and the fact that the rural poor have little or no access to credit facilities are some of the factors responsible for poor rural agricultural development in the country.

Is there a gap between agricultural training programs in Sierra Leone tertiary education institutions and graduates professional competencies vis-à-vis their relevance in the employment market? It is the perception of people that the programs offered at tertiary education institutions in the country have had low impact on the accessibility, affordability and adequacy of food items in the rural agricultural communities and that agricultural graduates from these institutions have weak practical experience.

**Aims and Objectives**

The general aim of this study is to evaluate the impact of selected tertiary education institutions on rural agricultural development in Sierra Leone.

**The specific research objectives are to**

Identify the tertiary education institutions and the types of Agricultural Programmes that are offered in Sierra Leone.

Identify the resources (human, finance, materials) available in tertiary institutions in the implementation of rural agricultural development in Sierra Leone.

Assess stakeholder’s perceived impacts of agricultural programmes offered in tertiary education institutions on the development of rural agriculture in Sierra Leone.
Identify the challenges/problems of tertiary education institutions in the implementation of rural agricultural development in Sierra Leone.

**Research Hypotheses**

Tertiary education institutions in the four regions of Sierra Leone are comparatively not offering equal number of agricultural programmes.

There is no significant difference in stakeholders’ perceptions of the sources of resources available (human, material, finance) in tertiary agricultural institutions at regional level in performing their role for rural agricultural development.

There is no significant difference in stakeholders’ perceptions of the impact (rating) of agricultural programs offered in tertiary education institutions on the implementation of rural agricultural development programs among the four (4) regions of Sierra Leone.

**Conceptual Framework and Literature Review**

Higher educational institutions were established in Sierra Leone since 1827. Among these were tertiary education institutions offering agricultural programmes. A few of these tertiary education institutions were selected for this study; at least one from each of the four (4) regions of the country. The principal role of these institutions is to produce graduates through teaching. These graduates are expected to work in the rural agricultural communities. Another significant role is to carry out research that is directly concerned with the rural areas and other aspects of lives. Tertiary education institutions also provide academic service to the rural community through consultancy.

Some of the graduates produced are employed in the rural communities as teachers, Extension Agents, Agricultural Officers with the ultimate aim of improving the rural agricultural communalities. But the rural agricultural communities remain
underdeveloped even though this phenomenon has continued for the past forty years with the establishment of tertiary education institutions including Njala University in 1964.

The rural agricultural communities lack basic amenities such as electricity, pipe borne water supply, market facilities, schools and hospitals. Poverty rate is extremely high with food insecurity prevailing throughout the year in these communities.

The purpose of this research is to investigate why agricultural communities remain underdeveloped even though agricultural graduates are produced every year and most of them are employed in rural agricultural communities in Sierra Leone.

**CONCEPTUAL FRAME WORK**

Impact of tertiary education institutions on rural agricultural communities in Sierra Leone

![Conceptual Framework Diagram]

**Why?**
- Rural Agriculture underdeveloped
- Poverty/No amenities
- Food Insecurity

**Impact/Effect**
- Rural Agricultural Development

**Role**
- Research
- Teaching
- Service

**Graduates**
- Extension Agents
Africa universities in general and specifically those in Eastern and Southern Africa (ESA) are facing severe challenges arising from globalization, increased population and reduced investment in tertiary education (Beintema et al, 1998). A study by Fine (1990) of the African Economic Research Consortium (AFRC) noted that “graduate training in any meaningful sense appeared to have collapsed in most Africa universities” because of declining funding, brain drain, deteriorating infrastructure, civil disorder, and massive expansion of undergraduate enrolment.

Aissetou and Madakadza (2002) affirmed that frequently mentioned challenges in Africa tertiary agricultural institutions include: lack of natural funding, brain drain due to lack of incentive, weak teaching capacity and quality and relevance of education. The authors further argued that African countries must be willing to invest in their human capital for development if they are to meet the challenges of agricultural productivity and food in-security facing Africa today. Aissetou and Madakadza (2002) argued that there are 70 researchers per million people in Africa compared to North America with 2,640 and Japan with 4,380 (IFPRI, 2006). The number of agricultural researchers declined by half in Sub-Saharan African countries in the last 20 years due to poor or no funding of tertiary agricultural education. This means that there has been no real research and teaching infrastructure and improvement in most African universities resulting in absolute and non-functional equipment during the last three decades.

Ekwami et al (2007) assert that the recent concerns with quality of agricultural training at post-graduate level in Africa is compounded by observations that agricultural universities are under-funded, as a result produce poor quality products and therefore need urgent curriculum reforms.

Crowder et, al., 2000 argued that agricultural education is expensive. It requires teaching aids, and materials, scientific
and teaching equipment to facilitate training in the institutions and experimental farms. The initial funds for building, teaching equipment, textbooks and agricultural machinery have usually been provided in the past by government and donor assistance. The maintenance and replacement of these facilities is generally beyond the existing financial resources of many institutions. The result is that most agricultural education institutions face great difficulties in ensuring properly equipped and functioning laboratories and practice farms. Not surprisingly, the objectives of experimentation, teaching, outreach on agricultural production are inadequately achieved. Therefore, more universities in sub-Saharan Africa are not operating at full capacity for generating the human resources needed for development (Temu et al, 2004).

Higher agricultural education worldwide is faced with key challenges. In Sierra Leone, these challenges influence the development of rural communities, which developmental aspiration constitutes a concern to the government and non-governmental organizations.

RESEARCH METHODOLOGY

Our study employed survey techniques to gather data. The study was based on qualitative and quantitative approach to collect primary data from focus group discussion and self completed questionnaires. The study was conducted in cities and towns where the institutions under investigations are located. Njala University is located at Njala and Bo referred to as the Campuses of Bo and Njala respectively. Eastern polytechnic is located in Kenema, Milton Margai College of Education and Technology in Godrich and Northern Polytechnic in Makeni.

Population

The population of the study included four tertiary education institutions situated in the four regions of the country; and also Deans and Registrars, heads of departments and students offering agricultural programs in these institutions and people in
the communities where the institutions are located. Thus, the total population was estimated as 2,986.

**Sampling**

A census study of deans and heads of department in the tertiary educational institutions was made. A purposeful sample of community people in the location of each tertiary institution was selected to participate in the study.

In the Western area and Northern region two institutions were selected; one from each region among seven tertiary educational institutions offering agriculture programmes using cluster sampling technique. The names of the institutions were written on pieces of paper from each region, the papers were mixed together and one was selected among the lots. The method was used to select the two institutions in the Western and Northern regions; one from each region respectively. Eastern polytechnics, in the east of the country and Njala University in the South were purposefully selected as they are the major tertiary educational institutions offering agricultural programs at higher level in these regions.

Using Krejcre and Morgan’s (1970) table the sample size from a known population were selected from the agriculture students population in each of the tertiary educational institutions as shown below:

<table>
<thead>
<tr>
<th>No</th>
<th>Name of Institution</th>
<th>Population (Agric. Students)</th>
<th>Sample</th>
<th>Deans, Registrars, Head of Depts.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Milton Margai College of Education</td>
<td>60</td>
<td>56</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>Northern Polytechnic – Makeni</td>
<td>1115</td>
<td>289</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>Eastern Polytechnics – Kenema</td>
<td>1060</td>
<td>289</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>Njala University (Njala Bo Campuses)</td>
<td>711</td>
<td>252</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td><strong>2,946</strong></td>
<td><strong>882</strong></td>
<td><strong>12</strong></td>
</tr>
</tbody>
</table>
The deans and heads of departments in the four tertiary agricultural education institutions are not part of the sample size as they were all selected for the study.

**Data collection**

In order to elicit information pertinent to the investigation, questionnaires were developed based on the study. The questionnaires were first validated by a panel of experts from the department of Agricultural Education Njala University and were pilot tested for reliability with a selected sample of respondents in private institutions offering agricultural programmes in the country.

The questionnaires were used to collect data from the study sample in the study area. The questionnaires were self administered to the university administrators and students. The researchers and the enumerators also conducted personal interviews with the study sample selected from the study population in the locations of the tertiary agricultural education institutions. Focus group discussions were also conducted among homogeneous population from the study sample which included chiefs, men and womens’ leaders, youths and religious leaders in each of the four regions.

**RESULTS**

The data collected from the study was analyzed using the statistical package for the social sciences (SPSS) generating frequencies and percentages. Descriptive and inferential statistics were used to report the findings. Pearson’s chi-squared test was used to test the null hypothesis.

The findings revealed that there were thirteen (13) tertiary education institutions offering agricultural programs in Sierra Leone. The study further revealed that there were five of these institutions in the Southern, two in the Western, one in the Eastern and five in the Northern regions. However, four of these were selected for this study.
The programmes offered in the four tertiary education institutions included Ph.D., M.Sc., B.Sc., B.Ed., H.T.C., T.C., HND, OND, Short term in-service and several weeks certificate programmes.

**FIGURE 1:** Types of Agricultural Programs Offered by Institutions Agriculture Programs Offered by Institutions in the Four Regions.

<table>
<thead>
<tr>
<th>REGIONS</th>
<th>SOUTH</th>
<th>NORTH</th>
<th>EAST</th>
<th>WEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutions</td>
<td>Njala University</td>
<td>Northern Polytechnic</td>
<td>Eastern Polytechnic</td>
<td>M. M. C. E. T.</td>
</tr>
<tr>
<td>Programs Offered</td>
<td>Ph.D. M.Sc. B.Sc. B.Ed. HTC, TC OND, HND</td>
<td>B.Sc. B.Ed. HTC, TC OND, HND</td>
<td>B.Sc. B.Ed. HTC TC OND, HND</td>
<td>B.Ed. OND HTC</td>
</tr>
</tbody>
</table>

Key:
- TC Teachers Certificate  H TC Higher Teachers Certificate OND Ordinary National Diploma
- HND Higher National Diploma  M.M.C.E.T Milton Margai College of Education and Technology

**Resource Availability (human, material, and finance)**

The findings revealed that administrative staff and academic staff were available in all the tertiary education institutions. However, the academic staff sizes were only minimally adequate in all the institutions. Furthermore, supporting staff including farm technical assistants for servicing agricultural programs were also minimally adequate. Thus, these institutions have inadequate academic and technical farm assistants and other supporting staff to contribute to developing the skills of learners for vocational agriculture. Material resources including learning resource centres (facilities) farm mechanics, hand tools, water and electricity, library and computer facilities, science laboratories were also inadequate in all the institutions. These institutions lacked adequate resources...
necessary for optimal production of skilled man power for increased agricultural development in rural communities.

**Figure 2**: Availability of Staff in the Four Tertiary Education Institutions.

**Impact of Agricultural Programmes on Rural Agricultural Communities**

The figure below depicts the responses of the community people within the environment where the tertiary agricultural institutions are located on the impact of agricultural programs in the implementation of rural agriculture in the country. In terms of accessing food within the Njala and Milton Margai communities, 64% and 75% respondents indicated moderate impact respectively while 53% and 75% respondents indicated low impact within the communities of Eastern and Northern Polytechnics. The high percentages 71% and 75% show that the programs offered have not influenced the availability of food within the communities. It depicts that various food items were not accessible in the communities where the tertiary education institutions are located.

The figure further revealed that 62.5% and 59.3% respondents within Milton Margai College and Njala communities respectively indicated moderate impact of affordability of food within their
communities while 31.7% and 28.6% respondents indicated low impact at Eastern and Northern Polytechnic communities respectively. These percentages show that much have not been done to influence the accessibility and affordability of food in the communities as a result of agricultural programs offered in the institutions.

Also 95% and 57% of the community people at Milton Margai College and Njala University environment respectively indicated low impact in respect of income generating level of farmers. The data shows that the income generating level is low within the communities where the tertiary education institutions are located.

The figure further depicts the impact “of the control of pests and diseases” on the rural communities as a result of the agricultural programs offered in the various institutions. The data revealed that 55.6% indicated low impact on the Njala communities, 70.6% states moderate impact on Milton Margai Community and 29.3% indicated low impact on Eastern and Northern Polytechnics.

The high percentages showing moderate and low impact of “control of pest and diseases” in the respective communities where the institutions were located indicated that the incidence of pests and disease attack on crops and animals were high in these regions.

The figure further depicts the impact of the level of education of the community people on farming due to agriculture program offered in the institutions. The study revealed that 40.17% and 44.4% respondents indicated moderate and low impact respectively on the level of education at Njala University Communities while 82.4% and 59% stated moderate and low on Milton Margai College communities respectively. Also 38.1% and 39.0% indicated moderate impact on the Northern and Eastern Polytechnics communities respectively.

The high percentages indicate that the agricultural programs offered in the institutions have not improved the level of education
and the skills of the farming population in the respective communities where the tertiary education institutions are located.

Conclusively, the agricultural programs offered in the various tertiary education institutions have had low impact on the lives of the people within the respective communities in terms of level of education, farm size, income generating level, adequacy, accessibility and affordability of food.

Figure 3: Impacts of Agricultural Programmes on Rural Agricultural Communities
Challenges of Tertiary Education Institutions.

The tertiary education offering agricultural programmes were managed without adequate funds from the government and students (major and minor sources of funding). This inadequate funding definitely affects the quality of education in the institutions.

Insufficient numbers of academic staff, technical farm assistants and other supporting staff were challenges evident also in the institutions. Increased demand for enrollment without corresponding increase in infrastructure and other facilities was a serious hurdle. Poor laboratory and library facilities expanded the scope of the challenges. It was further realized that poor or non-existence of communication and technology facilities exacerbated the situation for effective and efficient institutional service delivery.

Challenges/ Problems of Tertiary Education Institutions.

Hypothesis 1

The tertiary education institutions in the four regions of Sierra Leone are comparatively not offering equal number of Agricultural programmes.
H₀: U₁ ≠ U₂ ≠ U₃ ≠ U₄

The findings revealed that the tertiary education institutions in the four regions were not offering equal number of agricultural programmes.

In order to reject or accept the stated hypotheses the researcher sought the chi-square statistics using the critical value, and table value. The degree of freedom is 3. The alpha value is 0.05. Hence the critical table value is 7.815. The calculated chi-square is 2.217. The chi-square is found to be less than the table value, i.e., 2.217 < 7.815. Since the chi-square is less than the critical table value, i.e., 2.217 < 7.815, the decision is not to reject the null hypothesis. Therefore, there is no sufficient evidence to reject the claim that tertiary education institutions in the four regions are comparatively not offering equal number of types of programs. The researcher therefore confirms that tertiary education institutions in the four regions did not offer equal number of types of agricultural programs.

**Hypotheses 2**

Ho: There is no significant difference in stakeholders’ perceptions of the sources of resources available (human, material finance) in tertiary agricultural institutions at regional level in performing their role for rural agricultural development.
Table 3: Main Source of Resources (human, materials, finance)

<table>
<thead>
<tr>
<th>Institutions</th>
<th>Sources of ressources</th>
<th>Sierra Leone government</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Human</td>
<td>Materiel</td>
</tr>
<tr>
<td></td>
<td>Fr</td>
<td>%</td>
</tr>
<tr>
<td>Eastern Polytechnic</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>Northern polytechnic</td>
<td>4</td>
<td>100</td>
</tr>
<tr>
<td>Milton Margai College of EDU.</td>
<td>4</td>
<td>100</td>
</tr>
<tr>
<td>Njala University</td>
<td>6</td>
<td>100</td>
</tr>
</tbody>
</table>

Chi – square is 9.98. alpha value is 0.05. Table value is 12.59. Degree of freedom (df) is 6.
The chi – square calculated is less than the table value. i.e. 9.98 < 12. Therefore, the decision is not to reject the null hypothesis.

Table 4

<table>
<thead>
<tr>
<th>Institution</th>
<th>Sources of Funds</th>
<th></th>
<th></th>
<th>Educational organizations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Students</td>
<td>Business donors</td>
<td>Educational organizations</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eastern polytechnic</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>33.3%</td>
<td>33.3%</td>
<td>33.3%</td>
<td></td>
</tr>
<tr>
<td>Northern polytechnic</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>50%</td>
<td>25%</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>Milton Margai college of education</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>25%</td>
<td>50%</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>Njala university</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16.7%</td>
<td>66.7%</td>
<td>16.7%</td>
<td></td>
</tr>
</tbody>
</table>

The chi – square calculated was less than the table value; the degree of freedom was 6 (df6); and alpha value, 0.05. The chi – square calculated was 9.37, the table value was 12.59. The chi – square was found to be less than the table value; (9.37 < 12.59); The null hypothesis therefore is not rejected which states “that there is no significant difference in stakeholders’ perceptions of the sources of resources available in tertiary education institutions offering agricultural programs at regional level in performing their roles for rural agricultural development”.

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The perceptions of stakeholders is that even though government is the main source of resources (human, materials and finance) for running tertiary education institutions offering agricultural programs in the four regions, other sources include students, business donors, non governmental organizations (NGOs) and educational organizations.

**Hypothesis 3**

There is no significant difference in stakeholders’ perceptions of the impact (rating) of agricultural programs offered in tertiary education institutions on the implementation of rural agricultural development programs among the four (4) regions of Sierra Leone.

**Table 5: Impacts of Agricultural Programs on Adequacy of Food in The Rural Agricultural Communities.**

<table>
<thead>
<tr>
<th>Institutions</th>
<th>Low impact</th>
<th>Moderate impact</th>
<th>High impact</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fre %</td>
<td>Fre %</td>
<td>Fre %</td>
</tr>
<tr>
<td>Eastern Polytechnic</td>
<td>15 36.5</td>
<td>19 46.0</td>
<td>7 17.0</td>
</tr>
<tr>
<td>Northern Polytechnic</td>
<td>5 23.8</td>
<td>9 42.8</td>
<td>7 33.3</td>
</tr>
<tr>
<td>M.M.C.E.T.</td>
<td>0 0</td>
<td>12 75.0</td>
<td>4 25.0</td>
</tr>
<tr>
<td>Njala University</td>
<td>10 38.4</td>
<td>13 50</td>
<td>3 11.5</td>
</tr>
</tbody>
</table>

Calculated chi-square is 11.88. Table value is 12.59. df = 6 (alpha value) is 0.05.

The chi -square was found to be less than the table value; i.e. 11.88 <12.59. The decision is to accept the null hypothesis.
Table 6: Impacts of agricultural programs on affordability of food in rural agricultural communities.

<table>
<thead>
<tr>
<th>Institutions</th>
<th>Low impact</th>
<th>Moderate impact</th>
<th>High impact</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fre</td>
<td>%</td>
<td>Fre</td>
</tr>
<tr>
<td>Eastern Polytechnic</td>
<td>13</td>
<td>31.7</td>
<td>18</td>
</tr>
<tr>
<td>Northern Polytechnic</td>
<td>6</td>
<td>28.5</td>
<td>9</td>
</tr>
<tr>
<td>M.M.C.E.T.</td>
<td>0</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Njala University</td>
<td>6</td>
<td>22.2</td>
<td>16</td>
</tr>
</tbody>
</table>

Calculated chi-square is 11.496. df = 6. alpha value = 0.05. Table value = 12.59

Chi – square is less than table value 11.49 < 12.59

The decision is not to reject the null hypothesis.

Table 7: Impacts of Agricultural Programs on Farm Size

<table>
<thead>
<tr>
<th>Institutions</th>
<th>Low impact</th>
<th>Moderate impact</th>
<th>High impact</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fre</td>
<td>%</td>
<td>Fre</td>
</tr>
<tr>
<td>Eastern Polytechnic</td>
<td>18</td>
<td>43.9</td>
<td>10</td>
</tr>
<tr>
<td>Northern Polytechnic</td>
<td>10</td>
<td>47.6</td>
<td>7</td>
</tr>
<tr>
<td>M.M.C.E.T.</td>
<td>6</td>
<td>37.5</td>
<td>9</td>
</tr>
<tr>
<td>Njala University</td>
<td>15</td>
<td>57.6</td>
<td>7</td>
</tr>
</tbody>
</table>

Calculated chi-square is 10.39. Degree of freedom (df) is 6. alpha value is 0.05

Table value is 12.59. The chi-square is less than the table value. ie 10.39 < 12.59

The decision is to accept the null hypothesis. There is no significant evidence available to reject the null hypothesis which states that “there is no significant difference in stakeholders’ perceptions of the impact (rating) of agricultural programmes offered in tertiary education institutions on the implementation of rural agricultural development programs among the four regions of Sierra Leone”.

The perceptions’ of stakeholders is that agricultural programmes offered in tertiary education institutions had low impact on farm sizes in some communities and moderate impact on others in
terms of accessibility, adequacy and affordability of food items in rural agricultural communities in the four regions.

RECOMMENDATIONS

The researchers made the following recommendations based on the findings of the study.

**Tertiary Education Institutions and Types of Agricultural Programmes offered.**

1- The agricultural programs offered in the tertiary education institution should be equally distributed in the four regions of the country i.e. the number of programs offered in the institutions in the South should be the same across the country in the four regions.

2- Programs that are not related to agriculture should not be included in the curricula of tertiary agriculture institutions.

3- Agricultural programs that are relevant to the development of rural agricultural communities should be included in the curricula of tertiary education institutions.

**Availability of resources (human, materials and finance)**

1- Government should allocate sufficient funds to all levels of agricultural institutions for procurement of material resources to enhance successful implementation of agricultural programs in rural agricultural communities.

2- Heads of tertiary education institutions should provide better condition of service, promotion, and annual increment in salaries/ wages for academic and supporting staff and farm assistants.

3- The laboratories should be well equipped with practical materials such as tools, seeds, seedlings, fertilizers to enhance practical activities.
4- Practical facilities should be available in all the tertiary education institutions for raising livestock.

5- Land laboratories should readily be available in all the tertiary education institutions for practical lessons.

**Challenges of Tertiary Education Institutions**

1- Adequate funds should be allocated for the management of tertiary education institutions in the country.

2- Academic, supporting staff and farm assistants must be sustained in order to maintain high academic standard as motivated workers perform better.

3- Adequate information and communication facilities should be available in tertiary education institutions with continuous supply of electricity.

4- Tertiary education institutions should improve on the infrastructural and accommodation facilities to enable them enroll more students as the demand for these institutions is increasing every year.

**Impacts of agricultural programmes on Rural Communities**

1- Curricula should be revised in the tertiary education institution by incorporating modern ideas thus equipping student with up to date literature and research materials

2- Agriculture programs should be structure to enable students acquire practical skills for job market.

3- Agricultural institutions must maintain demonstration farms.

4- Student should perform practical training in the communities where the tertiary educations institutions are located by maintaining demonstration farms. The agricultural programmes will have an impact on the rural agricultural communities through these farms.
5- Agricultural Programs that will impact on rural agricultural communities should be incorporated in the curricula of tertiary agricultural institutions in the country.

REFERENCES


