The Impact of Technologies Diffused by the Tikonko Agricultural Extension Centre (TAEC) on Farmers of the Tikonko Chiefdom in Sierra Leone

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Abstract

Sierra Leone is a west African nation with about two-thirds of its population engaged in agriculture but it cannot feed itself. Agricultural activities were disrupted in Sierra Leone by a decade-long Civil War that created a great need for improved farming technologies. The Tikonko Agricultural Extension Centre (TAEC) operates in the Tikonko Chiefdom to assist local farmers in improving food production through the fabrication and repair of farm tools to be adopted and used by farmers. This study was conducted to investigate the impacts of TAEC’s technologies on farmers and their communities in the Tikonko Chiefdom. The target population consisted of 318 farmers who used TAEC’s technologies; the list of farmers was obtained from the Centre. A sample for the study (n = 74) was obtained through simple random sampling using a table of random numbers. A structured survey questionnaire was completed through one-on-one, oral interviews of farmers; 23.3% of the target population was interviewed. A majority of the farmers interviewed agreed that they readily adopted and used TAEC’s technologies. Moreover, most farmers strongly agreed that their introduction to and subsequent adoption of TAEC’s technologies had considerable impact on their farming practices and communities. The relevance of TAEC’s technologies to farmers in Tikonko Chiefdom was evident. Providing appropriate technologies that can be adopted by low income farmers stands to increase their productivity and self-reliance while improving their nations’ food security. It is undeniable that technologies contributing to food sufficiency and alleviating poverty are needed throughout much of the developing world.

Keywords: Farming; Sierra Leone; Technological Innovations
Introduction/Conceptual Framework

Sierra Leone is a west African coastal state that is bordered by Guinea in the northeast, Liberia in the southeast, and the Atlantic Ocean in the southwest. Sierra Leone covers a total area of 71,740 km² (27,699 sq mi) and has a population estimated at 6,294,774 (Central Intelligence Agency [CIA] Factbook, 2008). The country has a diverse environment ranging from savannah to rainforests. Freetown is the capital, seat of government and largest city. The climate is tropical, with two seasons determining the agricultural cycle: the rainy season from May to November, and a dry season from December to May, which includes harmattan, when cool, dry winds blow in from the Sahara Desert. The night-time temperature can be as low as 16 °C (60.8 °F); however, the average temperature is 26 °C (78.8 °F) and varies from around 26 °C (80 °F) to 36 °C (90 °F) during the year (CIA Factbook).

Sierra Leone is classified as one of the world’s “least developed” countries by the United Nations (UN). Its population is growing at a high annual rate but its per capita income is low making Sierra Leone one of the poorest countries in the world United Nations Development Programme [UNDP], 2007/2008). The proportion of Sierra Leone’s natural resources that percolate down to the general public is very small making living conditions extremely difficult; for example, the infant mortality rate in Sierra Leone is one of the highest in the world (Bledsoe, Ewbank, & Isiugo-Abanihe, 1998; CIA Factbook, 2008; Savage, 2006; UNDP). The roads are in very poor conditions, preventing farmers from bringing their products to the market. Human resource development has been neglected for many years with schools and hospitals lacking even the most basic supplies.

Agriculture was the largest sector in Sierra Leone’s economy, contributing 80% to the country’s Gross Domestic Product (GDP) and 30% of its export earnings (Food and Agriculture Organization [FAO], 2008), before the brutal Civil War. Therefore, the importance of agriculture to the national economy regarding income and employment opportunities is accepted. The majority of Sierra Leoneans live in rural areas and about two-thirds are engaged in agriculture and related activities for their livelihoods (FAO, 1996). Sierra Leone is endowed with substantial wealth in terms of cultivable land and natural resources. However, the distribution of income is markedly uneven and more than two-thirds of the population is estimated to live in absolute poverty (UNDP, 2007/2008). Moreover, Sierra Leone is recovering from a decade-long Civil War that disrupted its agricultural activities, thus, creating a great need for improved farming technologies.

For several decades, various suggestions have been made about how to raise agricultural production in Sierra Leone by empowering farmers to foster self-reliance and community development (Moriba, 2002). Kai Kai (1987) was among a few scholars who asserted the need to empower farmers before the outbreak of the Civil War in Sierra Leone in 1991. However, their ideas had not come fully to fruition when the brutal Civil War started. Thereafter, during the war, very little was accomplished in this area. To that end,

The former head of state and president of the Republic of Sierra Leone, Alhaji Dr. Ahmed Tejan Kabbah, has said that the major challenge of the Agricultural Sector in Sierra Leone is the attainment of food security by the end of year 2007, using the services to resource poor returnee farmers who look up to government to kick-start agricultural productivity, through the provision of basic inputs. (Sesay, 2007, ¶ 1)

A policy objective of the government is to encourage increased efficiency in the production of food crops and livestock. So, it is necessary to empower farmers by providing
them with technologies that will foster self-reliance and development in Sierra Leone. The Tikonko Agricultural Extension Centre (TAEC) was established purposely to achieve such a goal in the Tikonko Chiefdom (an administrative unit of the Bo District). TAEC operates in the Chiefdom to assist local farmers in improving food production (Kawa, 1992). It established a Small Farm Equipment Production Unit to fabricate and repair farm tools to be adopted and used by farmers.

The manufacturing of new technologies intended for adoption and use by farmers is supported by diffusion of innovations theory, as posited by Everett M. Rogers (2003). Rogers theorized that information about a new idea (i.e., an innovation) is spread among the people of a society through various communication channels, including mass media and interpersonal relationships. This posit takes into account the potential adopters’ perceptions of relative advantage over the existing idea or practice and its compatibility with their needs, values, and societal norms (Rogers, 2003). Rogers stated that, “Relative advantage is the degree to which an innovation is perceived as better than the idea it supersedes” (p. 15). For example, farmers may perceive the TAEC-produced technologies as having greater relative advantage because imported farm tools are much more expensive than locally produced tools. On the other hand, the new technologies were simple and easy to use so they were compatible with the farmers’ past experiences and values. According to Rogers, “The compatibility of an innovation, as perceived by members of a social system, is positively related to its rate of adoption” (p. 249).

The new technology also must be appropriate for the farmers and the environment. Harrison (1980) pointed out that appropriate technology means any technology that makes the most economical use of a country’s natural resources and its relative proportions of capital, labor and skills, and fosters attainment of national and social goals. So, fostering the adoption of appropriate technologies encourages the right choice of technology, and not simply letting commercial entities make that decision for potential adopters indirectly by what they decide to sell. According to the United Nations Industrial Development Organization (UNIDO) (1979), the concept of appropriate technology is viewed as the technology mix contributing most to economic, social and environmental objectives in relation to resource endowments and conditions of application in a particular country.

Appropriate technology is a dynamic and flexible concept, which must be responsive to varying conditions and changing situations depending on the country and its different social systems. Jequier and Blanc (1983) asserted that appropriate technology is now recognized as the generic term for a wide range of technologies characterized by any one or several of the following criteria: low investment cost per workplace; low capital investment per unit output; organizational simplicity; sparing use of resources; low cost of final product; or high potential for employment. Gordon (1967) argued for the introduction of simple machines into the non-industrial community, where adopters can improve their indigenous methods and the technology can be regarded as an intermediate stage between a subsistence and an industrialized economy.

The role of TAEC in assisting farmers of the Tikonko Chiefdom to improve their food production capacity has been a concern of Sierra Leone’s Ministry of Agriculture and Forestry, The Methodist Church of Sierra Leone (the primary donor to the Centre), the management of TAEC and the farming community (Moriba, 2002). Moreover, skeptics from several quarters, especially donors, have questioned the relevance of TAEC’s technologies given to farmers vis-à-vis the benefits gained. Thus, the need for a systematic inquiry regarding this phenomenon existed.
Purpose and Objectives of the Study

This study’s purpose was to investigate the impacts of TAEC’s technologies on farmers and their communities in the Tikonko Chiefdom of Sierra Leone. The specific objectives of the study were to 1) identify the types of TAEC’s technologies used by farmers; and 2) describe farmers’ perceptions of the impacts of TAEC’s technologies on food production levels in the Tikonko Chiefdom.

Methods and Data Sources

This descriptive study was conducted in the Tikonko Chiefdom in the Southern Province of Sierra Leone during 2002. Tikonko is seven miles from Bo (the second largest city in Sierra Leone) where the TAEC is presently located as a result of Sierra Leone’s recent Civil War that ended in 2002. The Chiefdom has extensive parcels of land suitable for farming. The main occupations of the inhabitants of Tikonko are subsistence farming, petty trading and diamond mining. “Shifting agriculture,” a system of cultivation that employs plot rotation in an effort to preserve soil fertility, is the technique largely practiced in the Tikonko Chiefdom (Moriba, 2002). Rice, cassava, sweet potato, maize (corn), oil palm, yam, and groundnut are among the crops grown in the Tikonko Chiefdom.

The target population of this study consisted of farmers who used TAEC’s technologies; the list of farmers was obtained from the Centre. A sample for the study (n = 74) was determined through simple random sampling using a table of random numbers. A structured questionnaire with summed-rating scale items (Creswell, 2008; Fitzpatrick, Sanders & Worthen, 2004) was used to collect data on the farmers’ perceptions of the impact of TAEC’s technologies on their farming practices and the general welfare of communities in the Tikonko Chiefdom (“5” = “Strongly agree,” “4” = “Agree,” “3” = “Indifferent” (or neutral), “2” = “Disagree,” and “1” = “Strongly disagree”).

Because most of the interviewees were illiterate, data were collected using a survey questionnaire that was completed through one-on-one, oral interviews of farmers; 23.3% of the target population was interviewed (n = 74). A panel of experts reviewed the instrument to ensure its content validity. The instrument was pilot-tested with farmers in a neighboring chiefdom. None of the farmers who participated in the pilot-test were included in the actual study.

Findings

Types of Technologies Diffused by TAEC

The technologies diffused by the TAEC were organized in three categories: motorized machines, manually-operated machines and blacksmith tools.

Motorized machines. Only one type of motorized machine was identified: grater machines. Of the farmers interviewed, 74.3% “strongly agreed” that they used the grater machines (Table 1). The grater machines were used to scratch the tuberous root of cassava. Cassava is a shrubby plant that is grown mainly in tropical regions. Both the tuberous root and leaves are eaten and it is a vital staple food for Sierra Leoneans, second only to rice. The cassava grater is a compact machine and the main components include a molded drum, a hopper (a bin for feeding the machine), and an exit channel. The grater machine has a motor wheel which facilitates movement and it uses a diesel engine.
Manually-operated machines. Eleven of TAEC’s manually-operated machines were used by farmers in the Tikonko Chiefdom: threshing machines, winnowing machines, wheelbarrows, shelling machines, seed mixers, well pulleys, jab planters, pressing machines, blacksmith blowers, honeybee smokers and block-making machines. Almost all of the farmers interviewed (95.9%) reported that they used threshing machines (Table 2). When rice grains ripen sufficiently in the hulls, the farmers harvest the rice by cutting the stalks. The threshing machine is then used to remove rice grains from the stalks. The traditional method of threshing rice is tedious and time consuming. Therefore, the threshing machines diffused by the TAEC served a very useful purpose for farmers.

A large majority of the farmers (93.2%) interviewed also “strongly agreed” that they used winnowing machines (Table 2). The winnowing machines were used for separating chaff from rice grains after it has been threshed out of the straw. The machine’s main component is an upright square frame, with a hopper that receives the rice. It is set in motion by a pair of rollers connected to the main axle by a strap. A hand-winch is used to turn the axles. The friction of a large spherical rubber facilitates the separation of the grains from the chaff. In addition, nearly 8-in-10 farmers (78.4%) “strongly agreed” that they used wheelbarrows for various purposes (Table 2).

More than 7-in-10 (74.3%) of the farmers “strongly agreed” that they used shelling machines (Table 2). Two types of shelling machines were used for shelling cashew nut and dried corn. The machine used for shelling cashew nut has a shelling section with interacting cutting blades. The cutting blades are associated with cutting guides and a shell splitter. The shelling machine used for shelling dried corn is made of wood with perforations, which hold the corn, and a spinning handle.

Of the farmers interviewed, most also “strongly agreed” that they used other manually-operated machines diffused by the TAEC: seed mixers (70.3%), well pulleys (70.3%), jab planters (66.2%), and pressing machines (63.5%) (Table 2). Seed mixers were used for mixing seeds before broadcasting while seed jabbers were employed for planting seeds in rows. Well pulleys were used to lift water from wells in sufficient quantity for all purposes including irrigating gardens. Pressing machines were used for extracting oil from crushed palm fruit, coconut and groundnut. Approximately one-third or fewer farmers “strongly agreed” that they used blacksmith blowers (36.5%), honeybee smokers (36.5%), or block-making machines (29.7%).

Table 1

<table>
<thead>
<tr>
<th>Motorized Machines Used by Farmers (N = 74)</th>
<th>Farmers using</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td>Grater machines</td>
<td>55</td>
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</tbody>
</table>

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Table 2

<table>
<thead>
<tr>
<th>Manually-operated Machines Used by Farmers (N = 74)</th>
<th>Farmers using</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threshing machines</td>
<td>71, 95.9</td>
</tr>
<tr>
<td>Winnowing machines</td>
<td>69, 93.2</td>
</tr>
<tr>
<td>Wheelbarrows</td>
<td>58, 78.4</td>
</tr>
<tr>
<td>Shelling machines</td>
<td>55, 74.3</td>
</tr>
<tr>
<td>Seed mixers</td>
<td>52, 70.3</td>
</tr>
<tr>
<td>Well pulleys</td>
<td>52, 70.3</td>
</tr>
<tr>
<td>Jab planters</td>
<td>49, 66.2</td>
</tr>
<tr>
<td>Pressing machines</td>
<td>47, 63.5</td>
</tr>
<tr>
<td>Blacksmith blowers</td>
<td>27, 36.5</td>
</tr>
<tr>
<td>Honeybee smokers</td>
<td>27, 36.5</td>
</tr>
<tr>
<td>Block-making Machines</td>
<td>22, 29.7</td>
</tr>
</tbody>
</table>

Blacksmith tools. Four main TAEC-produced blacksmith tools were used by farmers in the Tikonoko Chiefdom. Most of the farmers interviewed “strongly agreed” that they used cutlasses/machetes (94.6%), hoes (91.9%), hand trowels (82.4%) and hand forks (79.7%) (Table 3). These simple farm tools were widely used by farmers for land-clearing and cultivation activities.

Table 3

<table>
<thead>
<tr>
<th>Blacksmith Tools Used by Farmers (N = 74)</th>
<th>Farmers using</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cutlasses/machetes</td>
<td>70, 94.6</td>
</tr>
<tr>
<td>Hoes</td>
<td>68, 91.9</td>
</tr>
<tr>
<td>Hand trowels</td>
<td>61, 82.4</td>
</tr>
<tr>
<td>Hand forks</td>
<td>59, 79.7</td>
</tr>
</tbody>
</table>

Farmers’ Perceptions of the Impact of TAEC’s Technologies

Regarding farmers’ perceptions about the impact of TAEC-produced technologies on their practices, a majority “strongly agreed” with 16 of 18 statements describing various impacts of the technologies on their farming activities, livelihoods generally and communities (Table 4). A large majority of the farmers (82.4%) “strongly agreed” that they “adopted and used TAEC’s
technologies” (Table 4). Furthermore, 77% of the farmers “strongly agreed” that the use of the technologies diffused by the TAEC resulted in “greater farmer confidence,” and 17.6% “agreed.”

Moreover, most of the farmers “strongly agreed” with the following statements that described the perceived impact of TAEC’s technologies on them and their communities: “increased the interest of farmers to engage in farming” (73.0%); “reduced drudgery” (71.6%); “more food production” (68.9%); “good farmer-TAEC relationship” (68.9%); “farmer's ability to pay school fees for his/her children” (63.5%) and “increased agricultural activities” (62.2%) (Table 4).

A little more than one-half of the farmers “strongly agreed” with three other statements that described the perceived impact of technologies diffused by TAEC: “greater sense of cooperation among farmers” (55.4%); “improved quality of production” (55.4%); and “improved financial status of farmers” (52.7%) (Table 4). However, a substantial proportion of the farmers were “indifferent” regarding two of the 18 statements describing other impacts the TAEC-produced technologies had on their farming activities: “greater networking between farming villages” (43.2%) and “increased access to loans” (55.4%) (Table 4).

Table 4
Farmers’ Perceptions of Selected Impacts of TAEC’s Technologies on their Farming Practices and Communities (n = 74)

<table>
<thead>
<tr>
<th>Statement about Impact</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Indifferent</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>High adoption and use of TAEC technologies</td>
<td>61  82.4</td>
<td>13</td>
<td>17.6</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Greater farmer confidence</td>
<td>57  77.0</td>
<td>13</td>
<td>17.6</td>
<td>4</td>
<td>5.4</td>
</tr>
<tr>
<td>Increased interest of farmer to engage in farming</td>
<td>54  73.0</td>
<td>15</td>
<td>20.3</td>
<td>5</td>
<td>6.8</td>
</tr>
<tr>
<td>Reduced drudgery</td>
<td>53  71.6</td>
<td>17</td>
<td>23.0</td>
<td>3</td>
<td>4.1</td>
</tr>
<tr>
<td>More food production</td>
<td>51  68.9</td>
<td>22</td>
<td>29.7</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Good farmer-TEAC relationship</td>
<td>51  68.9</td>
<td>23</td>
<td>31.1</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Farmer's ability to pay school fees for his/her children</td>
<td>47  63.5</td>
<td>20</td>
<td>27.0</td>
<td>7</td>
<td>9.5</td>
</tr>
<tr>
<td>Increased agricultural activities</td>
<td>46  62.2</td>
<td>25</td>
<td>33.8</td>
<td>2</td>
<td>2.7</td>
</tr>
<tr>
<td>Improved quality of production</td>
<td>41  55.4</td>
<td>25</td>
<td>33.8</td>
<td>8</td>
<td>10.8</td>
</tr>
<tr>
<td>Greater sense of cooperation among farmers</td>
<td>41  55.4</td>
<td>26</td>
<td>35.1</td>
<td>4</td>
<td>5.4</td>
</tr>
<tr>
<td>Improved financial status of farmer</td>
<td>39  52.7</td>
<td>21</td>
<td>28.4</td>
<td>14</td>
<td>18.9</td>
</tr>
<tr>
<td>Ability to save due to increased income</td>
<td>35  47.3</td>
<td>29</td>
<td>39.2</td>
<td>10</td>
<td>13.5</td>
</tr>
<tr>
<td>Improved social status of farmer</td>
<td>33  44.6</td>
<td>21</td>
<td>28.4</td>
<td>15</td>
<td>20.3</td>
</tr>
</tbody>
</table>
Conclusions

A majority of the farmers interviewed readily adopted and used the TAEC’s technologies. The adopters’ perceptions of relative advantage and compatibility, i.e., two significant perceived attributes of an innovation (Perret & Stevens, 2003; Rogers, 2003), may have fomented their perceptions. Moreover, most farmers agreed strongly that their introduction to and subsequent adoption of TAEC’s technologies had considerable impact on their farming practices and communities. The relevance of the TAEC’s technologies to farmers in Tikonko Chiefdom was evident.

The main thrust for diffusing technologies in a rural farming community is to empower the farmers to become self-reliant in food production and to enhance economic growth in the community. Technologies suited for the locality may serve as a remedy for solving economic, social and environmental problems (Harrison, 1980). The farmers interviewed perceived that the TAEC-produced technologies contributed to production increases as well as employment and income generation by providing them with inexpensive farm machines and tools. The TAEC-diffused technologies increased the interest of farmers to engage in farming, led to more food production, increased agricultural activities in the Tikonko Chiefdom generally, improved the quality of production, and also to improved financial status of the farmers interviewed (Table 4).

Based on the farmers’ perceptions regarding the impact of TAEC-diffused technologies, a strong indication that they had very high appreciation for the technologies was expressed. A majority of the farmers who used the technologies perceived that they realized a considerable increase in their level and quality of production. The main goal of the TAEC was to help farmers of the Tikonko Chiefdom raise their production capacity to attain food self-sufficiency as well as associated effects on the general vitality of their communities. That goal was achieved to a large extent as a result of the high rate of adoption and use of Centre-produced technologies by the farmers in the Tikonko Chiefdom (Table 4).

However, the farmers did not perceive that the TAEC-produced technologies had much impact on stimulating networking between farming villages or increasing their access to credit. This should be a cause for concern because networking provides individuals with an opportunity to expand their knowledge and skills and also increases access to resources (Munjanganja & Kenny, 2008). Moreover, credit is vital for relieving poverty because it allows individuals to borrow against future income to make current investments in their enterprises (Shimek & Sengupta, 2007).
Discussion and Implications

The results of this study suggest that farmers in developing countries can improve their farming activities and contribute to their nations achieving food sufficiency and development if properly empowered. Too often, change agents try to diffuse new technologies into a farming community, only to find that a relatively small percentage of farmers will actually adopt and use the technologies to any significant degree (Rogers, 2003). Contrary to this viewpoint, the TAEC achieved high farmer usage of its technologies. The farmers readily accepted TAEC’s technologies, an indication that the Centre made considerable difference in the lives of the farmers in the Tikonko Chiefdom by enhancing their agricultural production activities.

Although not exactly the type of sophisticated farm machines and equipment used by commercial farmers in the developed world, the technologies diffused by the TAEC boosted the confidence of the farmers interviewed. It was evident among the farmers that the TAEC-produced technologies increased their interest to engage in farming. Adopting and using a new technology may have motivated some farmers to cultivate more land. The impression of farmers could have been that farming in the Tikonko Chiefdom was entering an era of renewal. Another positive outcome associated with a rising interest of farmers to engage in farming is that it may also create employment opportunities for others in their communities and increase the income of those individuals.

Technological advances can have a dramatic effect on food production in a society, which, in turn, could lead to accelerated economic development more generally. In the Tikonko Chiefdom, the adoption and use of TAEC-produced technologies by farmers resulted in more food production. Improving agricultural production by empowering farmers in the Tikonko Chiefdom is evidence of the impact such technologies could have on development if replicated in other parts of Sierra Leone and the region. When farmers in Tikonko harvested their crops in the past, they likely had to use almost all of their harvest for family consumption with little or nothing left to sell. This situation may have changed after farmers started using TAEC-produced technologies because most had increases in production, therefore, making it possible to sell some of their harvest.

A goal of most farmers is to improve their financial status. Many of the farmers interviewed perceived they had achieved that through the use of the tools and equipment manufactured by the TAEC. The entire process that led to the farmers’ improved financial status may have had a significant “multiplier effect.” From their adoption and use of TAEC’s technologies, most of farmers interviewed expressed greater confidence and interest in farming. That encouraged increased agricultural activities and eventually more food was produced, which ultimately resulted in the improvement of the financial status of many farmers. This fundamental idea is vital in the diffusion of new technologies, i.e., adopters’ views regarding the relative advantage of an innovation vis-à-vis their existing practices and the long-term continuance of their adoption behaviors (Rogers, 2003).

Recommendations, Educational Importance, and Application

It is recommended that increased support be given to the TAEC. This would enable its staff to produce more farm tools and equipment for their clientele. Producing more farm tools and equipment would ensure adequate availability of these technologies for farmers’ use thereby motivating them to cultivate more farm land, increase their appreciation for farming and their ability to be productive. Further, with additional resources, TAEC could improve the quality,
efficiency, and appropriateness of its technologies. This would encourage farmers to eliminate the use of crude farm tools and intensify their use of TAEC-produced technologies.

Subsistence agriculture, a farming system in which farmers grow only enough food to feed their family, is widely practiced in many west African nations. This could be attributed to a lack of appropriate technologies (Moriba, 2002) available for use by farmers. Therefore, important lessons from this study could be learned by other developing countries with agrarian economies that are also struggling to eradicate poverty, especially those nations who may be dealing with the aftermath of civil conflict. Providing appropriate technologies that can be adopted by low income farmers stands to increase their productivity and self-reliance while improving their nations’ food security. It is undeniable that technologies contributing to food sufficiency and alleviating poverty are needed throughout much of the developing world.

**Recommendations for Further Research**

The following recommendations may be useful for further research: 1) Examine the farmers’ individual performances with regards to income earned in relation to the adoption and use of TAEC-produced technologies; 2) Assess the impact of the other units of TAEC, i.e., the Farm Unit and the Integrated Health and Agricultural Program Unity, on the farming communities in the Tikonko Chiefdom; 3) Investigate the managerial policies governing the operations of TAEC and identify the strengths and weaknesses of the Centre. This would enable the Centre’s management to take actions and make necessary adjustments to move toward a desired future, and may create rationale for additional resources to support the Centre’s work; and 4) Identify factors possibly associated with farmers’ perceptions that their adoption of the TAEC’s technologies did not impact networking between farming villages or increase their access to credit.

**References**


