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Economic Effects of Farmer-grazer Conflicts in Nigeria:
A Case Study of Bauchi State

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Abstract: The study examined the economic effects of farmer-grazer conflicts in the
fadamga areas of Bauchi State in Nigeria. Bauchi State occupies total land area of
492,359 km² and has human population of 4,696,465. Using multistage random
sampling technique a total of 60 fadamga farmers were randomly selected from
60 Fadamga Users Associations (FUA) and a corresponding 60 pastoralists randomly
selected from 60 fadamga communities where the selected FUAs resided. Primary
data were collected using structured questionnaire administered through individual
personal interviews. The data were analysed using the descriptive statistics, t-test
and alternative cost technique. Results revealed that about N3, 193, 100.00 was incurred from both totally damaged and partially destroyed tube well/washbore
equipment with water pumps recording N176, 415.00. Motorcycles and bicycles
accounted for N565, 254.00 in terms of losses experienced. Comparatively, the arable
farmers incurred higher (N80, 075,172.00) losses in monetary term than the
pastoralists (N7, 047, 013.00). While reduction in farm production, increased poverty
within and among the communities and social insecurity and inadequate food
supply for the family were the major setbacks encountered in the area, interruption
of education of children and reduction in healthcare provision of the family
represented relatively lower proportions. Further, the income (N358, 000.00) of
farmers in the conflict area was significantly (p<0.05) lower than those in
non-conflict areas (N457, 313.00). Conclusively, the farmer-grazer conflicts have
had negative economic effects on both the families involved and the nation in terms
of the huge resources lost. It is therefore, strongly recommended that the
government should put appropriate measures towards curbing the occurrence of
such conflicts for the benefit of all.

Key words: Losses, cost, distortion, destruction, poverty

INTRODUCTION

The need to provide food of crop and animal origin to meet the growing demand due to
population increase necessitates the opening up of land hitherto uncultivated. For instance,
the present world population of over 6.5 billion rising from 2.5 billion in 1950 is estimated to
reach 8.9 billion by the year 2050 (Ochi and Toro, 2007). The intensification of the population
driven agriculture often necessitates the adoption of certain farming techniques such as
irrigation techniques (Oehi and Malumfashi, 2005), which is recently being given national and international support in many African countries (Gefu and Kolawole, 2003). Due to the concern about the overall worsening food production and nutrition situations in Nigeria, the World Bank offered to assist the country in accelerating local food production through fadama development (Gefu and Kolawole, 2003). The target was to utilize flood plain and wetlands (fadama) for dry season irrigated agricultural production.

The fadama represents one of the major productive systems of the terrestrial landscape and are found in every continent except in Antarctica with estimate of about 4-6% of the earth surface (Masamari, 2004). In essence, the objective of the World Bank was to promote agricultural growth through conjunctive exploitation of surface and shallow aquifer water resources for smallholder owned and managed small scale irrigation system (FACU, 1993). A pilot project on small scale farmer managed irrigation system was executed by some of the World Bank funded Agricultural Development Projects (ADPs) in 1982/83 with a sound success which informed the endorsement of the system as a key source of agricultural growth by the Federal Government (World Bank, 1992). On account of this, the National Fadama Development Project (NFDP) was put in place in 1993.

The core implementing states of NFDP I (Bauchi, Gombe, Kano, Jigawa, Katsina, Kebbi, Sokoto and Zamfara States) are characterized by Sudano-sahelian ecological zone (semi arid) with long dry season from October to May. Evapo-transpiration ranges from 2000-2400 mm, while rainfall ranges from 600-900 mm in the zone (IFESH, 1998). The water deficit in this area necessitates full irrigation during dry season and supplementary irrigation during the wet season for high crop production.

The NFDP loan package commenced in 1993 and terminated in 1998 with reported expansion in fadama cultivation (BSADP, 1998). However, practical field indicator identified conflicts arising from the use of fadama resources as a key set back in the project and has also threatened the sustainability of achievements made over the years (BSADP, 1998). Upton (1996) envisaged this phenomenon for any irrigation project and recommended that when irrigation systems are introduced, appropriate institutional structure must be established for allocation of water, distribution of complementary inputs, such as seeds and fertilizer, maintenance of the system and conflict management. Brench (2004) affirmed the competition for land, water and vegetation by pastoralists and farmers coupled with scarcity or dwindling of the resources and adverse climatic changes all act as precipitant in pastoralist-farmer conflicts.

The conflict is by nature economic and mostly inflected to promote parochial interest devoid of communal interest which is undesirable, destructive and therefore constitute an impediment to growth and development of agricultural economy (Musa, 2004; Collier, 1999). Therefore, this study, economic effects of farmer-grazer conflicts in Bauchi State, Nigeria was intended to evaluate the economic consequences as a result of conflicts experienced in Fadama areas towards deriving appropriate policies with the hope of curbing further occurrences.

MATERIALS AND METHODS

Study Area

Bauchi State occupies a total land area of 492,359 km², representing about 5.3% of Nigeria’s total land mass (Adaba et al., 2008). The state spans two distinct agro-ecological zones, namely; the Sudan savannah and the Sahel savannah. It is located between latitude
9°3' and 12°3' North of Equator and longitude 8°50' and 11° East of the Greenwich Meridian (Adaba et al., 2008). Based on 2006 census result, the state has human population of 4,676,465. The state is bordered by seven states: Kano and Jigawa to the North, Taraba and Plateau to the South, Gombe and Yobe to the East and Kaduna to the West.

The weather is hottest in the month of April, with temperature rising up to 40.55°C and coolest in the months of December and January when the temperature may fall as low as 09.11°C (Muhammad, 2003). The annual rainfall ranges from 700 to 1,300 mm and the relative humidity of about 12% in February and 68% in August (Muhammad, 2003).

**Data Collection**

Data for the study were generated from two sources viz., primary and secondary. Primary data were collected in 2004, 2006 and 2007 fadama seasons using structured questionnaire, which was administered to the crop farmers and pastoralists through personal interview. Secondary data were collected on the socio-economic characteristics, consequences of conflicts, frequency of conflicts, financial cost/benefit of conflict and economic impact of conflict. Secondary data were sourced from available literature and relevant documents of agencies such as Bauchi State ADP, National Livestock Development Project, Ministry of Agriculture and Natural Resources, etc.

**Methods of Data Analysis**

The approach to the analysis of losses incurred in the conflicts is similar to that employed by Yonguan et al. (2001) when analysing the environmental cost of water pollution in Chiang qing, China. It was specifically on the damage to human health and life. Using the strategy of estimating the resource cost of the water pollution which actually consisted of two items: (1) resource spent to mitigate the impact, e.g., the cost of treatment of ill health, (2) the loss of potential GDP—the loss through leave of absence from work by the victim. For the dead, they employed the loss of production (the production possibility forgone)—expected production and or its value by the victim.

The approach is embedded in the opportunity cost concept expressed by Lipsey and Chrystal (1955) as choice measuring the cost of anything that is chosen in term of the best alternative that could have been chosen instead. The sacrificed alternative measures the cost of obtaining what is chosen.

However, in the conflict situation, circumstance determines the choice and the alternative, but in principle of opportunity cost, the alternative is used to measure the choice as in the case of cost of water pollution above. This establishes the alternative cost principle the Alternative Cost Technique (ACT).

In applying the principle for the analysis of economic loss from the farmer-pastoral conflicts, the elements were categorized into the following component and processes of analysis.

**Loss Due to Death of Human (LD)**

\[ \text{LD} = \text{EEPO} + \text{EESO} + \text{EEOS} \]  

(1)

*Where:*

EEPO = Expected earnings from primary occupation
EESO = Expected earnings from secondary occupation
EEOS = Expected earnings from other sources
Loss Due to Injury (LI)

\[ LI = Ct + Eet, \]  

Where:
\begin{align*}
Ct & = \text{Cost of treatment of injury} \\
Eet_t & = \text{Expected earnings during period of treatment by victim}
\end{align*}

Loss of Facilities

- Partial loss (damaged) of facility (Ldf)

\[ Ldf = Cr + Eef, \]  

Where:
\begin{align*}
Cr & = \text{Cost of repair} \\
Eef_t & = \text{Expected earnings from facility during time spend on repairs}
\end{align*}

- Complete loss of facility (Lif)

\[ Lif = PVf \]  

Where:
\begin{align*}
PVf & = \text{Present value of facility (depreciated value of facility)}
\end{align*}

The facilities included: water pumps, tube/wash-bore and other farm equipment for both farmer and pastoralists

Loss of Shelter

- Loss due to damaged shelter (Lds)

\[ Lds = Cr + Cfd, \]  

Where:
\begin{align*}
Cr & = \text{Cost of repair of shelter} \\
Cfd & = \text{Cost of family displacement during time of repairs}
\end{align*}

- Loss due to total loss of shelter (Lls)

\[ Lls = PVs + Cfd + Hlp \]  

Where:
\begin{align*}
PVs & = \text{Present value of shelter (depreciated value)} \\
Cfd & = \text{Cost of family displacement} \\
Hlp & = \text{Value of household property loss}
\end{align*}
Cost Due to Loss of Farm/farm Produce

- (for both crops and livestock) = Lly

\[ Lly = Y \times (P - C) \]  

Where:
- \( Y \) = Total quantity produced/expected to be produced
- \( P \) = Unit price of the produce
- \( C \) = Cost of production

Therefore, the total loss (in monetary terms) due to the farmer-pastoralist conflict:

\[ TLDC = (LD + LI + Li/ld + Li/s + Ls/ls + Lly) \]

Paired sample test was employed to know if there was a significant difference in the rate of loss incurred by arable farmer and pastoralist with the formula:

\[ t = \frac{X_1 - X_2}{sd} \]

- \( X_1 \) = Total loss incurred by arable farmer
- \( X_2 \) = Total loss incurred by pastoralists

RESULTS AND DISCUSSION

Financial Loss Incurred in the Farmer-Pastoralist Conflicts

Table 1 shows that the heaviest loss in monetary terms (N72,117,006.00) arose from the loss of farm and farm products. This was more valid where about 200 incursions were made into the arable farmers’ farm during the period. Livestock that were lost through the farmers-pastoralists conflict included 34 cattle and 11 sheep/goats, valued about 1.8 million Naira and N66,000.00 for cattle and sheep/goat, respectively.

Six persons lost their lives during the period with anticipated economic contribution valued at N2,844,000.00. The number of persons injured in the farmer-pastoralists conflict as revealed by the study was 45 among whom 15 persons were incapacitated that they could not perform their economic activities during the period of treatment. The cost implication due to the body injuries of those affected in this respect was about N2.64 million.

The result of the analysis shows that six houses were completely destroyed beyond repairs while five were able to accommodate repairs. However, the monetary value of the loss incurred on shelter was N5,920,410.00.

The use of irrigation facilities is a common activity in fadama cultivation. The facilities include the irrigation pump and the tube well/washbore. Results of the analysis have indicated that about 230 tube well/wash bores were totally destroyed, while 103 were partially damaged and were therefore repaired. About 91 among the damaged could not be operated for the farming activities during repairs. In essence, the repair period was lengthy and they could not be used for economic purpose. The total value of loss incurred from both totally destroyed and partially damaged tube well/wash bore was N3,193,100.00.

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Table 1: Cost of the farmer-pastoralist conflict in Bauchi State between 2003 and 2007

<table>
<thead>
<tr>
<th>Item</th>
<th>No./Qty</th>
<th>Source of costs</th>
<th>Mean value of cost (N)</th>
<th>Total value of loss/cost (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human life losts</td>
<td>6</td>
<td>Annual earnings from:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Primary source</td>
<td>397,000</td>
<td>2,382,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Secondary source</td>
<td>77,000</td>
<td>462,000</td>
</tr>
<tr>
<td>Injured persons</td>
<td>45</td>
<td>cost of treatment</td>
<td>43,000</td>
<td>1,935,000</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>Expected earning during treatment</td>
<td>47,000</td>
<td>705,000</td>
</tr>
<tr>
<td>Shelter (house)</td>
<td>6</td>
<td>Depreciated value</td>
<td>78,000</td>
<td>4,380,000</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Cost of repairs</td>
<td>240,000</td>
<td>1,200,000</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Cost of using alternative accommodation</td>
<td>113,470</td>
<td>340,410</td>
</tr>
<tr>
<td>Farm/farm produce</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crops</td>
<td>200</td>
<td>Expected output value</td>
<td>351,235</td>
<td>70,247,000</td>
</tr>
<tr>
<td>Livestock; Cattle</td>
<td>34</td>
<td>Market value of animal</td>
<td>53,059</td>
<td>1,804,006</td>
</tr>
<tr>
<td>Sheep/goat</td>
<td>11</td>
<td>Market value of animal</td>
<td>6,000</td>
<td>66,000</td>
</tr>
<tr>
<td>Facilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total loss</td>
<td>230</td>
<td>Depreciated value</td>
<td>6,500</td>
<td>1,495,000</td>
</tr>
<tr>
<td>Partial loss</td>
<td>103</td>
<td>Cost of repairs</td>
<td>2,700</td>
<td>278,100</td>
</tr>
<tr>
<td></td>
<td>71</td>
<td>Expected earnings during:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Period of repairs</td>
<td>20,000</td>
<td>1,420,000</td>
</tr>
<tr>
<td>Water pumps</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total loss</td>
<td>10</td>
<td>Depreciated value</td>
<td>15,320</td>
<td>153,200</td>
</tr>
<tr>
<td>Partial loss</td>
<td>3</td>
<td>Cost of repairs</td>
<td>5,405</td>
<td>16,215</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Expected earnings during:</td>
<td>7,000</td>
<td>7,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Period of repairs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Means of transportation</td>
<td>7</td>
<td>Depreciated value</td>
<td>53,451</td>
<td>374,157</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Cost of repairs</td>
<td>21,233</td>
<td>191,097</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grand total</td>
<td></td>
<td>N87,456,185</td>
</tr>
</tbody>
</table>

Source: Field survey data 2004-2007

Destruction and or damages of water pumps was not as much as those of the tube wells, specifically, because most farmers either went home with the pump or kept them safe away from the farm after the day’s operation (Massam, 1998). However, the results of this study revealed that 10 pumps were destroyed and 3 were damaged. The value of losses incurred as a result of destruction or damages of water pumps was N176, 415.00.

Reports have indicated that the transhumant pastoralists who in most cases were more aggressive and combat ready often perpetrated the destruction of irrigation facilities in the night and disappeared before dawn to unknown location, leaving the resident pastoralist with blames (Sule, 1998). Those carried out during the days were often met with retaliations from farmers resulting to violence leading to loss of livestock and even human life. According to Sule (1998), the animals killed during the conflict were never consumed by anyone.

The study revealed that means of transportation such as motorcycles and bicycles were destroyed during the course of conflict between the farmers and pastoralist. Accordingly, about 7 units were destroyed while a unit was damaged but later repaired. The value of loss in respect of destroyed and damaged motorcycles and bicycles was N565, 254.00.

The value of the total loss incurred during farmer-pastoralist conflicts in the study areas was about N87.12 million. This represents a huge economic loss from the economy of Bauchi State.

**Loss Incurred by Arable Farmers and Pastoralists Compared**

The monetary value of losses incurred by the two categories of respondents within the specified period 2003-2007 revealed who actually suffered greater loss. However, not all classes of loss were incurred by both categories.
The result in Table 2 shows that the arable farmers incurred higher losses in monetary term than the pastoralist (N80,075,172 compared to N7,047,013) with difference of N73,028,159.

Although, there was a huge difference between the total loss incurred in monetary term by the arable farmers and the pastoralist, the result of the paired sample t-test revealed that there was no significant difference proportionally in the rate of losses. In essence, both the arable farmers and the pastoralists suffered losses in similar way.

Effects of the Farmer-pastoralist Conflicts on Livelihood

Farmer-pastoralist conflicts are generally considered as a negative phenomenon which often lead to loss of lives and properties which invariably impacts negatively on the community.

Table 3 shows that reduction in farm production was the most serious effect accounting for 90%, followed by increased poverty within and among the communities (76.7%), social insecurity and inadequate food supply for the family accounted for 67.5 and 65.7%, respectively. Reduction in farm production could be linked to many other factors and consequences. This could be brought about by scarcity and increase in cost of inputs including labour resulting from conflict (Sule, 1998). Consequentially, food items are scarce and there is reduction in income leading way to poverty. This may not be far fetched

<table>
<thead>
<tr>
<th>Type of loss</th>
<th>Arable farmer N-value</th>
<th>Pastoralist N-value</th>
<th>Total N-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human life lost</td>
<td>1,422,000</td>
<td>1,422,000</td>
<td>2,844,000</td>
</tr>
<tr>
<td>Injured person</td>
<td>1,351,000</td>
<td>1,225,000</td>
<td>2,576,000</td>
</tr>
<tr>
<td>Shelter (house)</td>
<td>3,333,470</td>
<td>2,316,940</td>
<td>5,650,410</td>
</tr>
<tr>
<td>Farm/Farm produce crop</td>
<td>70,247,000</td>
<td>-</td>
<td>70,247,000</td>
</tr>
<tr>
<td>Livestock</td>
<td>1,870,006</td>
<td>1,870,006</td>
<td>3,740,012</td>
</tr>
<tr>
<td>Facilities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wells</td>
<td>3,193,100</td>
<td>-</td>
<td>3,193,100</td>
</tr>
<tr>
<td>Pumps</td>
<td>176,415</td>
<td>-</td>
<td>176,415</td>
</tr>
<tr>
<td>Means of transport</td>
<td>352,187</td>
<td>213,067</td>
<td>565,254</td>
</tr>
<tr>
<td>Total</td>
<td>80,075,172</td>
<td>7,047,013</td>
<td>87,122,179</td>
</tr>
<tr>
<td>Paired sample test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>906,4790.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard deviation</td>
<td>24768289.983</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard error</td>
<td>875612.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>t-value</td>
<td>1.035</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig (2 tailed)</td>
<td>0.355</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Field survey data 2004-2007

<table>
<thead>
<tr>
<th>Effects</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inadequate food for the family</td>
<td>80</td>
<td>66.7</td>
</tr>
<tr>
<td>Interrupted dependent education</td>
<td>43</td>
<td>35.8</td>
</tr>
<tr>
<td>Reduction in health care provision in the family</td>
<td>58</td>
<td>48.3</td>
</tr>
<tr>
<td>Unable to repay loan</td>
<td>70</td>
<td>58.3</td>
</tr>
<tr>
<td>Reduction in farm production</td>
<td>108</td>
<td>90</td>
</tr>
<tr>
<td>Increased poverty</td>
<td>92</td>
<td>66.7</td>
</tr>
<tr>
<td>Social insecurity</td>
<td>81</td>
<td>67.5</td>
</tr>
<tr>
<td>Occupational mobility</td>
<td>35</td>
<td>25</td>
</tr>
<tr>
<td>Spill over effect</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distortion in price of goods</td>
<td>100</td>
<td>83.3</td>
</tr>
<tr>
<td>Refugees management</td>
<td>38</td>
<td>31.7</td>
</tr>
<tr>
<td>Scarcity of food items</td>
<td>94</td>
<td>87.3</td>
</tr>
<tr>
<td>Migration of labour</td>
<td>78</td>
<td>65.0</td>
</tr>
<tr>
<td>Social insecurity</td>
<td>90</td>
<td>70.0</td>
</tr>
</tbody>
</table>

Source: Field survey data 2004-2007; * Multiple responses
from why manifestation of poverty was rated second highest effect of conflict. Similarly, probable link to reduction in production was inadequate food for the family. According to Goodhand (2001), one of the most devastating effects of wars or conflict is scarcity of food item which often led to poverty and diseases. This further buttressed the manifestation of poverty in the conflict committee. Project coordinating unit in 2003 identified social insecurity as one effect of conflict which often hampers the accomplishment of other life endeavour including economic activities such as production and marketing. Although, interruption of education of children and reduction in health care provision of the family represented relatively lower proportions (35 and 48%, respectively), they are critical issues in the life of the communities. The lower proportion might not be unconnected with the fact that most children of the respondents especially the pastoralist did not attend school.

It has been established that most violent conflicts do not stop at the boundary of the communities in which the conflict occurs (Blomberg et al., 2001), it often spill-over to neighbouring communities.

Table 3 also indicates that distortion in prices of goods and services accounted for 83%, scarcity of food items 78.3% and social insecurity 75%. It asserts that the first economic parameter often affected by war or conflict situation is price of goods and services; because other factors such as transportation cost, labour, information disruption affect the price of goods and services. Scarcity of foods during conflict is a very common phenomenon as there could be blockage in supply and diversion to peaceful environment. Social insecurity is a common manifestation in conflict situation especially when it is a violent one. People develop fear of being attacked unnecessarily which also negatively affect their ability to carry out their economic activities (Blench, 2004). Perhaps there were fewer refugees during the conflicts which were why refugee’s management accounted for 31.7%. However, it was one of the most important effects of war or conflict as asserted by Pal (2003), which creates a huge burden on the government or the neighbouring communities.

**Economic Impact of the Land Resource use Conflict**

Here, the economic impact of the land resource use conflicts from the result of the comparative analysis of the conflict areas and their neighbourhood where conflict did not occur (Table 4) shows that the average income of the farmers in the conflict area (N358, 000.00) was significantly (p<0.05) lower than that of the farmers in non conflict area (N437, 313.00). However, the average price of fadama fruit vegetable was significantly higher (p<0.001) in the conflict community than the non-conflict community. Despite the increase in prices, the farmer income in conflict area was lower. This was directly attributable to intrusion into farm by pastoralist, scarcity of input such as fertilizers, abandonment of

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Conflict community</th>
<th>Non-conflict community</th>
<th>Difference</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average income from farm (N)</td>
<td>338,000</td>
<td>437,313</td>
<td>79,313</td>
<td>2.081*</td>
</tr>
<tr>
<td>Average price of fadama fruit, vegetable (tomatoes, pepper, garden egg (N))</td>
<td>4,120</td>
<td>2,922</td>
<td>1,198</td>
<td>4.807***</td>
</tr>
<tr>
<td>Average labour cost per Maudry (N)</td>
<td>750</td>
<td>450</td>
<td>300</td>
<td>3.104**</td>
</tr>
<tr>
<td>Average cost of transportation of Farm products (100 kg/bag) (N)</td>
<td>200</td>
<td>140</td>
<td>60</td>
<td>2.02**</td>
</tr>
<tr>
<td>Average price of a bull (N)</td>
<td>81,000</td>
<td>78,424</td>
<td>2,576</td>
<td>0.922**</td>
</tr>
<tr>
<td>Person abandoned fadama farming (No.)</td>
<td>21</td>
<td>3</td>
<td>18</td>
<td>6.70***</td>
</tr>
<tr>
<td>Number of drop out of school (not able to pay school fees) (number)</td>
<td>7</td>
<td>2</td>
<td>5</td>
<td>6.61***</td>
</tr>
</tbody>
</table>

*p<0.05; **p<0.01; ***p<0.001; Ns: Nonsignificant; Source: Field survey data 2004-2007
fadama farming, a phenomenon buttressed by Collier report. It was to this fact that Bennnon and Collier (2004) assert that as conflict range, income tends to plummet, mortality rises and even diseases spread.

The difference in the transportation and labour costs in the conflict area and non-conflict area were significant (both p<0.01).

Easterly (2000) proclaimed that conflicts generally reduces the desired stock of factors of production such as labour often reduced through killings and immigration which in turn hike price of labour. Easterly further added that increase in prices of inputs as encouraged by the conflict situation does have direct negative impact on income such that the affected persons were impoverished.

Transportation is crucial to aspects of production, processing and marketing of agric product and therefore, whatever affects it would have impact on the general outcome of production process (Collier, 1999). Thus, the increase in its price must have contributed to the lower income of the farmers in the conflict areas.

However, the difference in average price of bulls between the conflict and non-conflict communities was not significant probably because transportation costs were often eliminated as the animals were mostly moved on legs to their sales points.

The difference between the number of persons who abandoned fadama farming as a result of conflict in the conflict community (21) and the non-conflict community (3) was highly significant (p<0.001) suggesting that the conflict situation have discouraged cultivation of fadama crops negatively impacting on the food security of the community.

The result also indicated that children drop out of school resulting from inability to pay school fees was significantly (p<0.001) higher in the conflict community (7 children) than in non-conflict community (2 children). This was the aftermath of lost of breadwinner and reduction in income of the fadama farming families during the conflict situations as revealed by the study. The drop out incidences would invariably draw back education statuses which suppose to actually assist in reducing conflict incidences as already indicated by the study.

CONCLUSION

The outcome of the study has revealed the devastating consequences of fadama areas resource-use conflicts in terms of the prohibitive financial loss amounting to 87.4 million encompassing lost of both human and livestock lives and properties within a five years period. The conflicts have had negative impact on the economic lives of the communities. Their average income was substantially reduced; price of goods and services were significantly increased. The aftermath of the conflicts was critical economic incapacitations manifesting in inability to pay children school fees leading to drop out. Many farmers abandoned fadama owing to the conflict which led to reduction in production as attested to by the results of the study. Improving the education status of the community and establishment of standard grazing reserve would reduce conflict. However, the study established the necessity of forming a relief programme for the victims of the conflicts.

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