ASSESSMENT OF WILDLIFE PESTS ON FADAMA FARMS ALONG RIVER BENUE (FROM ABINSI TO AGBOUGHUL SETTLEMENTS) IN MAKURDI LOCAL GOVERNMENT AREA OF BENUE STATE, NIGERIA

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ABSTRACT

This study explored the effect of wildlife pests on the large expanse of fadama land from Abinsi to Agboughul Settlements in Makurdi Local Government Area of Benue State, Nigeria. Structural questionnaire such as focus group discussion (FGD) targeting young energetic farmers between the ages of 21-30 years was used. Random sampling technique was employed to select one hundred respondents from the two settlements, (50 each from the two settlements). The data obtained were subjected to descriptive statistics (such as frequency, percentages and tables). The result showed that cane rat (Thryonomys swinderianus) (37%) and rabbit (Capensis cuniculus) (32%) caused the most damage to the Fadama crops as compared to giant snails, (Achatina achatina (11%) and Nile rat (Arvicanthis niloticus) (20%). Furthermore, 44% of the farmers agreed that the animals visited the farms at night and while 25% and 11% believed the visits were in both night and early morning respectively. Attempt to control the wildlife pests revealed that most species continually killed could be as a result of lack of awareness campaign, agro forestry practices and integrated farming system. These endangered species or at least threatened may pose a dangerous trend to our wildlife conservation principles. However, this can be minimized through well planned education programmes for the farmers.

Keywords: Fadama, Wildlife, Pest, floodplain, Season.

1. INTRODUCTION

Fadama farming is practiced along major floodable plains and Savannah Rivers mainly to increase the farmers’ self sufficiency in food production and income. Increase in food production is achievable through increased agricultural activities in both wet and dry seasons, (Junk et al, 1989). The National Fadama development was structured into developmental stages for efficiency in implementation strategy, (Obieching, 2000). The project design is both participatory and socially in nature.

The approach is to empower farmers to take control of/ and manage their resources for their own development, (Aderinola, 2001). The programme is expected to reduce the poverty level of small holder farmers through increased agricultural production and the attendant income, (Ogunlela, 2008). The major financiers are the World Bank (WB), African Development Bank (ADB) and Nigerian Government, (NFDO, 2005). Fadama farmers in Benue State, Nigeria utilize the large expanse of Fadama lands in these areas for both crop production and grazing. Other activities
include fishing/fish farming and a forestation programmes, (NFDO, 2007). However, there are numerous challenges militating against the optimum derivable benefits that the Fadama has to provide to stakeholders. The most important of these challenges is that of Wildlife pests raids, apart from insects, diseases and weed management in crop lands. Intensification of agricultural activities has often brought with it pest related problems. For example, harmful chemicals threaten the environment and human health alike (Cooper and Dobsona, 2007). Therefore, integrated pest management (IPM) has emerged as a way towards maintaining or increasing agricultural productivity without over-reliance on synthetic chemical pesticides. One of the fundamental principles of IPM emphasizes the need not only to deal with pests and diseases once they have become a problem but also to promote the growth of healthy crops or livestock in trying to conserving the natural resources base, (Nathaniels et al, 2003). However, well detailed informations about farmers’ awareness of wildlife pests and diseases are necessary in fashioning programmes that would aid the realization of the objectives of the Fadama programmes.

2. MATERIALS AND METHODS

Study Area: This study was carried out and concluded on Fadama farms along the River Benue in Abinsi and Agboughul settlements in Makurdi Local Government Area of Benue State, Nigeria between March 2014 and April 2015. Makurdi (study Areas) lies between latitude $7^\circ.44^1$ to $8^\circ.22^0$N and longitude $8^\circ.32^1$E and $8^\circ.44^1$E with an altitude of 112m above sea-level.

Vegetation and Climate:
This area lies within Guinea Savannah vegetation, characterized by two clear distinct wet and dry seasons. Rainy seasons begins from April to October, averaging 1524mm/annum and temperature ranging between 28$^\circ$C- 30$^\circ$C most times of the year. Dry season begins from November to early April with dry harmattan wind and temperature ranging from 20$^\circ$C to 35$^\circ$C.
Farming Activities/Farm Products:
The farmers were predominantly Hausa, Tiv, Kabawa and Jukum people living along the bank of the River Benue (Abinsi and Agboughoul areas). The agricultural products include the following: cassava, Guinea corn, rice, sugar cane, vegetable, garden eggs, green leafy vegetables (Ugwu leaf), groundnut, potatoes, tobacco and maize. During dry season, irrigation is predominantly practiced. Wild animals species found in the area as pests include giant rat (Cricetomys gambianus); cane rat (*Thryonomys swinderianus*); Squirrel (*Xerus erythropus*); Nile rat (*Arvicanthus niloticus*), weaver birds (*Ploceus cucullatus cuculatus*) and reptiles such as giant tortoise (*Kinxys crosa*).

Farm Size:
Most of the farm size in both study areas were between 1-2 hectares per farmer along the bank of River Benue.

Farmers Age Group:
From the data collection, the farmers age were between 18-20 years (school age); young farming age (between 21-30 years) and strong elderly between the age of 41-51 years.

Methodology:
Structural Questionnaire (Focus Group Discussion) was designed for the farmers. One hundred
questionnaires were administered on one hundred respondents (50 each from Abinsi and Agboughul). Frequent visits (three times per week) were also made to farms where wildlife pests could be sighted physically with the kind of damage to crops and parts of crop affected during the farming/harvesting seasons. Subsequently, animal burrows, feeding sites and affected crop types were examined. The information collected from the farmers include, wildlife species causing damage, the time of visit of the animal to the farm, parts of the crops/plants damaged, the period of the year these animals caused most damaged, the level of damage, the residence of the animal and methods of control. These informations were then tabulated and percentage frequency obtained.

Data collection
Primary data were obtained from structural questionnaire (Focus Group Discussion) administered to 100 farming Respondents from the two villages (i.e. 50 each from Abinsi and Agboughul). Secondary data were also obtained from oral interviews and unpublished materials.

Data Analysis
The data were analyzed using descriptive statistic such as frequency, percentages and tables.

3. RESULTS

Table 1: Wildlife pests that caused damage to crops at Agboughul and Abinsi

<table>
<thead>
<tr>
<th>S/N</th>
<th>Common Names</th>
<th>Scientific Name</th>
<th>Agboughul</th>
<th>Abinsi</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Rabbit</td>
<td></td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>Cane rat</td>
<td></td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>3.</td>
<td>Giant tortoise</td>
<td></td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>4.</td>
<td>Nile rat</td>
<td></td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>5.</td>
<td>Squirrel</td>
<td></td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>6.</td>
<td>Giant rat</td>
<td></td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>7.</td>
<td>Grasshopper</td>
<td></td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>8.</td>
<td>Cricket</td>
<td></td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>9.</td>
<td>Termites</td>
<td></td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>10.</td>
<td>Birds</td>
<td></td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

Source: Field Survey (2014/2015)
(+)= Present
(-)= Absent
Most wildlife pests were found in both study areas except that Giant tortoise was not seen in Agboughul while rabbit was absent at Abinsi farms.

Table 2: Different crops and pest infestation in Agboughul + Abinsi

<table>
<thead>
<tr>
<th>S/NO</th>
<th>Name of Crop Common Name</th>
<th>Specific types of wildlife pest infestation common Name</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Sugar cane</td>
<td>Cane rat</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Rice</td>
<td>Birds/Grasshopper</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Maize</td>
<td>Birds/Squirrel</td>
<td></td>
</tr>
</tbody>
</table>
Table 2 showed the specific types of wildlife pest infestation in both Abinsi and Agboughul settlement in Makurdi Local Government Area of Benue State, Nigeria.

Source: Field Survey (2014/2015)

Plate 1: Stalks of sugar damaged by wild animal pests
Sources: field survey (2014).
Plate 2: Tools used in killing wild animal pests
Sources: Field survey (2014).

### Table 3: Demographic/social-economic status of the respondent

<table>
<thead>
<tr>
<th>OPTIONS</th>
<th>AGBOUGHUL</th>
<th>BOTH</th>
<th>ABINSI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frq</td>
<td>%</td>
<td>Frq</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>66</td>
<td>34</td>
<td>11</td>
</tr>
<tr>
<td>Female</td>
<td>34</td>
<td>66</td>
<td>39</td>
</tr>
<tr>
<td>Total</td>
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<td>100</td>
<td>50</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
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<td>45</td>
<td>21</td>
</tr>
<tr>
<td>Married</td>
<td>41</td>
<td>41</td>
<td>19</td>
</tr>
<tr>
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<td>8</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Widow</td>
<td>4</td>
<td>4</td>
<td>3</td>
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<td>Separated</td>
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<td>2</td>
<td>1</td>
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<td>100</td>
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<td></td>
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<tr>
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<td>57</td>
<td>57</td>
<td>9</td>
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<tr>
<td>Muslim</td>
<td>19</td>
<td>19</td>
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Sources: Field survey (2014).
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<thead>
<tr>
<th>Age</th>
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</tr>
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<td>21–30</td>
<td>19</td>
<td>5</td>
<td>100</td>
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<tr>
<td>31–40</td>
<td>19</td>
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<tr>
<td>41–50</td>
<td>19</td>
<td>5</td>
<td>100</td>
</tr>
<tr>
<td>&gt;50</td>
<td>3</td>
<td>1</td>
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<td>Total</td>
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<thead>
<tr>
<th>Educ. Status</th>
<th>Non-formal education</th>
<th>Primary</th>
<th>Secondary</th>
<th>ND/NCE</th>
<th>HND/Degree</th>
<th>PGD</th>
<th>Total</th>
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<tr>
<td>20</td>
<td>20</td>
<td>7</td>
<td>37</td>
<td>13</td>
<td>13</td>
<td>13</td>
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<td>2</td>
<td>18</td>
<td>6</td>
<td>10</td>
<td>10</td>
<td>100</td>
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<td>38</td>
<td>10</td>
<td>1</td>
<td>36</td>
<td>6</td>
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<td>10</td>
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<td>19</td>
<td>7</td>
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<td>8</td>
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<td>100</td>
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<table>
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<tr>
<th>Family Size</th>
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<th>4 – 6</th>
<th>7 – 9</th>
<th>10 – 12</th>
<th>12 above</th>
<th>Total</th>
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<tbody>
<tr>
<td>16</td>
<td>15</td>
<td>31</td>
<td>39</td>
<td>12</td>
<td>3</td>
<td>100</td>
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<td>12</td>
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<td>100</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>6</td>
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</tr>
<tr>
<td>Total</td>
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<td>50</td>
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<td>50</td>
<td>100</td>
<td>100</td>
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<table>
<thead>
<tr>
<th>Occupation</th>
<th>Civil Servant</th>
<th>Fishing</th>
<th>Trading</th>
<th>Tailoring</th>
<th>Othera</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>10</td>
<td>21</td>
<td>12</td>
<td>3</td>
<td>6</td>
<td>100</td>
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<td>10</td>
<td>21</td>
<td>12</td>
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<td>6</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>34</td>
<td>18</td>
<td>4</td>
<td>12</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100</td>
<td>50</td>
<td>50</td>
<td>100</td>
<td>100</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Annual Income</th>
<th>&lt;2000</th>
<th>2000</th>
<th>4000</th>
<th>6000</th>
<th>8000</th>
<th>Total</th>
</tr>
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<tbody>
<tr>
<td>12</td>
<td>6</td>
<td>10</td>
<td>12</td>
<td>6</td>
<td>12</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>
From table 3, 66% of the respondents were males while 34% were females. Furthermore, 45% were single, (41%) married, 8% divorced, (4%) widows and (2%) separated. Also, (57%) were Christians, (19%) Muslims and traditional worshippers others, (5%). However, 46% of the farming population were between 21-40 years of age, while 24% were less than 21 years of age which were the most active age for farming. Educationally, 37% had secondary school education, 13% were ND/NCE holders while 20% had no formal education and only 7% attended primary school. Also, 39% of the farmers had household size of 7 to two persons; 31% had 4-6 persons while 30% had household size between 0-4 persons. From the table also, the major occupation of the farmers was crop farming (48%) while 21% went into fishing. Traders and Civil servant had 2% and 10% respectively. In income generation, 32% had an annual income less than #20, 000 while 25% had an annual income of above #100, 000.

Table 4: Activities of pests and level of Destruction

<table>
<thead>
<tr>
<th>OPTIONS</th>
<th>AGBOUGHUL</th>
<th>BOTH</th>
<th>ABINSI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frq</td>
<td>%</td>
<td>Frq</td>
</tr>
<tr>
<td>Other works apart from farming</td>
<td></td>
<td></td>
<td>Civil Servant</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
<td></td>
<td>Student</td>
</tr>
<tr>
<td>40</td>
<td></td>
<td></td>
<td>Trading</td>
</tr>
<tr>
<td>14</td>
<td></td>
<td></td>
<td>Tailoring</td>
</tr>
<tr>
<td>Others</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Animal cause damage to crops</td>
<td>No</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>----</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>Yes</td>
<td>71</td>
<td>71</td>
<td>27</td>
</tr>
<tr>
<td>Total</td>
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<td>100</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Wild Animals causing most Damage</th>
<th>Cane Rat</th>
<th>20</th>
<th>20</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wild Animals causing most Damage</td>
<td>Rabbit</td>
<td>53</td>
<td>53</td>
<td>33</td>
</tr>
<tr>
<td>Wild Animals causing most Damage</td>
<td>Giant Snail</td>
<td>9</td>
<td>9</td>
<td>7</td>
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<tr>
<td>Wild Animals causing most Damage</td>
<td>Nile Rat</td>
<td>16</td>
<td>16</td>
<td>2</td>
</tr>
<tr>
<td>Wild Animals causing most Damage</td>
<td>Others</td>
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<td>2</td>
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</tr>
<tr>
<td>Total</td>
<td>100</td>
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<td>50</td>
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</table>

<table>
<thead>
<tr>
<th>Animal causing most damage</th>
<th>Cane Rat</th>
<th>37</th>
<th>37</th>
<th>12</th>
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</thead>
<tbody>
<tr>
<td>Animal causing most damage</td>
<td>Rabbit</td>
<td>32</td>
<td>32</td>
<td>18</td>
</tr>
<tr>
<td>Animal causing most damage</td>
<td>Giant Snail</td>
<td>20</td>
<td>20</td>
<td>11</td>
</tr>
<tr>
<td>Animal causing most damage</td>
<td>Nile Rat</td>
<td>11</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
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<td>100</td>
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<table>
<thead>
<tr>
<th>Time of visit to animals</th>
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<th>16</th>
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<th>16</th>
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<tbody>
<tr>
<td>Time of visit to animals</td>
<td>Night</td>
<td>44</td>
<td>44</td>
<td>15</td>
<td>30</td>
</tr>
<tr>
<td>Time of visit to animals</td>
<td>Day-light</td>
<td>25</td>
<td>25</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>Time of visit to animals</td>
<td>Others</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>50</td>
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### Part of crops damage

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<thead>
<tr>
<th></th>
<th>Leaves</th>
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<th>1</th>
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<tbody>
<tr>
<td></td>
<td>Stem</td>
<td>39</td>
<td>39</td>
<td>23</td>
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<td>Seed</td>
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<td>Others</td>
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<td><strong>Total</strong></td>
<td></td>
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<td>100</td>
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### Type of crop destroyed

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<td>Rice</td>
<td>31</td>
<td>31</td>
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<td>56</td>
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<td>3</td>
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<td>Maize</td>
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<td>13</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>100</td>
<td>100</td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>

### Period of the year damage is most

<table>
<thead>
<tr>
<th></th>
<th>Rainy</th>
<th>39</th>
<th>39</th>
<th>22</th>
<th>44</th>
<th>19</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dry</td>
<td>24</td>
<td>24</td>
<td>11</td>
<td>22</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>All yr</td>
<td>37</td>
<td>37</td>
<td>17</td>
<td>34</td>
<td>18</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>100</td>
<td>100</td>
<td>50</td>
<td>100</td>
<td>50</td>
</tr>
</tbody>
</table>

### Level of damage

<table>
<thead>
<tr>
<th></th>
<th>Heavy</th>
<th>38</th>
<th>38</th>
<th>10</th>
<th>20</th>
<th>28</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Light</td>
<td>46</td>
<td>46</td>
<td>26</td>
<td>52</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>16</td>
<td>16</td>
<td>14</td>
<td>28</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>100</td>
<td>100</td>
<td>50</td>
<td>100</td>
<td>50</td>
</tr>
</tbody>
</table>

### Animals most abundant

<table>
<thead>
<tr>
<th></th>
<th>Cane Rat</th>
<th>32</th>
<th>32</th>
<th>29</th>
<th>58</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nile Rat</td>
<td>29</td>
<td>29</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Giant Snail</td>
<td>14</td>
<td>14</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>
From table 4, Cane rat (*Thryonomys swinderianus*) 20% and Nile rat (*Arvicanthis niloticus*) 16% caused the most damage. While giant snail caused the least damaged. About 44% of the farmers agreed that animal visited the farms at night while 41% believed the visits were in the night and early morning.

However, 15% of the farmers were of the opinion that the wild animals visited the farms any time of the day. Also, from table 4, 39% of the wild animal pest attacked stem while 32% destroyed the seeds; 24% destroyed the bark and 5% destroyed leaves and other parts. Most damage (39%) was done during rainy season while 24% were mostly during dry season. However, 37% believed the damaged was all throughout the year. The result also revealed that 46% opined the damage was light while 38% indicated heavy damage. However, 16% could not really ascertain the level of the damage. From the table 4 also, the most abundant wildlife pests in the study areas was cane rat (32%) while the least was cricket (11%). The result also showed that 40% of the animals lived around the farm while 30% were believed to have lived inside and away from the farm respectively. Moreover, 50% of the farmers believed the attacked was at any stage while 24% and 22% concluded that the attacks were after matured and flowering plants respectively.
Table 5: Control methods used for pests

<table>
<thead>
<tr>
<th>OPTIONS AGBOUGHUL</th>
<th>BOTH</th>
<th>ABINSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control method</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemical</td>
<td>44</td>
<td>16</td>
</tr>
<tr>
<td>Biological</td>
<td>22</td>
<td>14</td>
</tr>
<tr>
<td>Integrated Farming</td>
<td>20</td>
<td>13</td>
</tr>
<tr>
<td>Physical</td>
<td>13</td>
<td>1</td>
</tr>
<tr>
<td>Others</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Use of Poisonous baits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>22</td>
<td>11</td>
</tr>
<tr>
<td>No</td>
<td>78</td>
<td>39</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Awareness of Organizational concerned</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>27</td>
<td>15</td>
</tr>
<tr>
<td>No</td>
<td>73</td>
<td>35</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>With protection of wild life</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Tools used in killing wild life</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dane Gun</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Bush burning</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>Traps</td>
<td>48</td>
<td>42</td>
</tr>
<tr>
<td>Chemicals</td>
<td>31</td>
<td>15</td>
</tr>
<tr>
<td>Others</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Estimated crops destroyed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50 Mt/Ha/Yr</td>
<td>40</td>
<td>22</td>
</tr>
<tr>
<td>50 – 100Mt/Ha/Yr</td>
<td>3</td>
<td>19</td>
</tr>
<tr>
<td>&gt;100m Mt/Ha/Yr</td>
<td>30</td>
<td>18</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Field Survey, (2014)

Table 5 showed the various method used by farmers in the study area to control pests. These were chemicals (44%), biological method (20%), while 20% uses integrated farming method, 13% and 1% uses physical and other method of controlling pests respectively.

In this table also, 22% of the farmers use poisonous bait to control pest while 78% do not used poisonous bait to control in the study area.

The result further showed that 27% of the FADAMA farmer were actually aware of the organization involved in the protection of wildlife pests protection.

Furthermore the farmers used traps (48%), Chemical (31%), and 15% used bush burning as a method in pest control. The result in the table showed the estimated crops destroyed 50Mt/Ha/Yr (40%), while 30% believed it was far above 100m Mt/Ha/Yr.
4. DISCUSSION
The effect of wildlife pests on FADAMA farms in Abinsi and Agboughul villages along River Benue in Makurdi Local Government Area was investigated. The survey was carried out during the dry season (November (2014)- April, 2015) during dry season farming activities in the Fadama areas. The quantity of crop/plants damaged was not accurately known since the farmers were not keeping the authentic records. However, the damage caused by the pests may represent a significant loss to the farmers who could only afford to cultivate small hectares (average of 1-2 hectares) of the farm land annually. Most of these wildlife pests are visible during dry burning period of late December to January. This was in line with the view of Ayodele and Akanbi (1993), during their work on effect of ecological study of wildlife pests on Fadama farms in Savannah zones of the middle belt of Nigeria.

From the 100 questionnaire administered on Fadama farmers and 20 farms visited showed that four major wildlife pests were identified with cane rats (Thryonomys swinderianus) as the most abundant representing 32% of the pest population. The abundance of cane rat may be due to high birth rate (litter size) as a result of abundance food in the study areas, (Odoh, 1993). However, the numbers of crops and plant damaged in Agboughul Fadama farms were less than that of Abinsi. This might be as a result of the proximity of Agboughul to Makurdi main town being a sub-urban community with major cosmopolitan disturbing influences from Makurdi town.

According to the Fadama farmers majority of the wildlife pests (44%) were essentially nocturnal, apparently as an adaptation to avoid predators. But other species, notably the Nile rat, Arvicanthus niloticus were more active both day and night.

It was also revealed that the stem, seed and bark were the parts of crops/plants mostly damaged by the wildlife pests e.g. sugar cane, rice and cassava. About 40% of the respondent indicated the presence of these wildlife pests in the farms. Probably, this is because suitable habitats such as shrub and grasslands, warehouses and domestic premises served as home and harbor these wildlife pests, (Funmilayo, 2008). The pest control measures adopted by farmers, though not very effective included traps (48%), chemicals (31%), bush burning (15%), use of dane gun (4%) and biological method such as the use of hunting dogs (22%). It is wise to mention here too that these methods were inimical to wildlife conservation principles.

Usually, wildlife legislations forbid the capture of pregnant females, infant and nursing parent stock in order to enhance procreation and perpetuation of the stock species, (Palmer and Martin, 1999). Also, the poison baits used in hunting/killing these wildlife fauna pests, endangered the life of the final consumers of the ‘bush meat’ and the farm products, (Bamgbose et al, 1996).

5. CONCLUSION
This study indicates that wild animal pests caused damage to crops even on Fadama farms. This brings about economic loss to the Fadama farmers and therefore discourages them from large scale Fadama farming. Also, most of the captured/killed wildlife pests could be endangered or threatened thereby negating the value or essence of wildlife conservation principles. However, this fear can be minimized through well planned education and awareness campaign, Agro forestry practices and integrated farming system, (IFS).

6. RECOMMENDATION
1. Use of scare crow should be encouraged among local FADAMA farmers to scare particularly, the Avian species.
2. Farm patrol at regular intervals by both farmers and game patrol at team to study the movements of these animals should be encouraged into track them down.
3. Clearing of bushes in farm surrounding and inside the farms be carried out regularly to discourage the habitation of farms by these wildlife pests.
4. Introduction of wildlife extension services to educate farmers on wildlife conservation principles should be encouraged e.g. using integrated farming system.

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