Socio-economic impact of rinderpest in Nigeria

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Summary: The recurrence of rinderpest in Nigeria since September 1980 and widespread epizootics in 1983-84 claimed almost half a million cattle, and impaired the health of another million and a half which survived. Losses caused by rinderpest were aggravated by complicating diseases and the widespread drought of 1983. The losses were estimated to amount to 1.5 billion naira ($2.0 billion). Many cattle owners became bankrupt when they lost all their cattle due to disease, or sold them at low prices for salvage. Many cattle owners were forced to give up the trade of tending cattle. No development of cattle or economic emancipation of their owners is possible as long as this scourge continues to inflict severe economic losses.

**EPIDEMIOLOGY OF DISEASE**

The situation of rinderpest in Nigeria from September 1980 to June 1983 is detailed elsewhere (6). While sporadic outbreaks were still occurring in most northern states of the country, a new epizootic on the Mambilla Plateau (close to the border with Cameroon) took a heavy toll of cattle due to the natural disease, and later due to provocation of latent disease when mass vaccination was introduced to control it. The Plateau has large concentration of susceptible cattle (1.5 million) and is inaccessible in the wet season because of steep and bad roads leading to it. Cameroonian authorities were said to be shooting without compensation cattle suspected of rinderpest, so the cattle owners had gone into hiding or sold their cattle at low prices across the borders. Two such herds entered Nigeria in August 1983, and before the disease could be stamped out by slaughter of the affected herds and ring vaccination around the focus, the disease had spread to 35 others involving 3,365 cattle with 1,471 (43.7%) sick, 1,376 (93.5%) of which died within a month. Over 10,000 head of cattle died before the epizootic was brought under control (Fig. 1).

In the wet season grazing became available everywhere, and this slowed down the movement of cattle and with it the spread of the disease. Closure of Nigerian borders for political reasons and for controlling currency exchange prevented entry of trade cattle and the infection with them.

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FIG. 1

Rinderpest in Nigeria from September 1980 to September 1983

The number of rinderpest outbreaks in the different Nigerian states during the period is given. Arrows indicate the direction of spread of the disease. Semi-circles represent the less infectious virus strain and circles the highly infectious strain. The new epizootic on Mambilla Plateau is shown as a star.
As an aftermath of rinderpest, very many outbreaks of contagious bovine pleuropneumonia were reported from Kano, Kaduna, Bauchi, Borno, Plateau and Gongola states. Normally the local zebu cattle are somewhat resistant to many tropical endemic diseases like trypanosomiasis, babesiosis, ana­plasmosis, heartwater, coccidiosis, haemonchosis, virus diarrhoea and infectious bovine rhinotracheitis, but during the epizootic all these complications aggravated the illness and increased the mortality in affected cattle.

The severe drought of 1983 and indiscriminate bush burning forced widespread migration of cattle in search of pasture and water, accelerating the spread of the disease. Malnutrition and starvation reduced vitality and rendered cattle prone to diseases of all kind. Table I gives annual statistics for the outbreaks reported, cattle infected and cattle died and slaughtered from September 1980 to June 1984 in Nigeria.

### Table I

**Summary of rinderpest outbreaks in Nigeria (1980-84)**

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of outbreaks reported</th>
<th>No. of cattle exposed</th>
<th>No. of cattle ill</th>
<th>No. died and slaughtered</th>
<th>Vaccinations carried out</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Sept.-Dec.)</td>
<td>20</td>
<td>5,661</td>
<td>906</td>
<td>478</td>
<td>802,987</td>
</tr>
<tr>
<td>1981</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>3,258</td>
<td>831</td>
<td>437</td>
<td>1,086,124</td>
</tr>
<tr>
<td>1982</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>55</td>
<td></td>
<td>23,248</td>
<td>1,901</td>
<td>826</td>
<td>985,605</td>
</tr>
<tr>
<td>1983</td>
<td></td>
<td>7,961,453</td>
<td>1,849,160</td>
<td>418,327</td>
<td>8,885,540</td>
</tr>
<tr>
<td>1984</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Jan.-June)</td>
<td>97</td>
<td>451,123</td>
<td>98,410</td>
<td>31,211</td>
<td>215,680</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1,155</td>
<td>8,444,743</td>
<td>1,951,208</td>
<td>451,279</td>
<td>11,975,936</td>
</tr>
</tbody>
</table>

**CONTROL MEASURES**

Infected herds entering into the country were slaughtered and the persons involved were fined for importing and hiding infected animals. Infected local herds were segregated and ring vaccination was carried out to prevent further spread.

Because vaccine was in short supply, 5 million doses were imported from India and Kenya. Local production was also doubled by installing two new freeze-driers. Unspecified amounts of vaccine were also imported from
Egypt, Israel, Great Britain and other countries. Veterinary Services at Federal, State and Local Government levels were geared up for mass vaccination, facilitated by special subventions of 3.5 million naira in 1983 and 3.0 million naira in 1984 for control of rinderpest. F.A.O. also donated vaccine production equipment worth $250,000.

**COST ESTIMATES**

Losses due to rinderpest are modified by predisposing factors like migratory pastoralism and poor nutrition which impair health and may lead to secondary complicating diseases. In an attempt to salvage affected herds, animals were either sold cheap or emergency slaughtered, aiding spread of the disease by transport of infected meat or animals.

Table II gives estimates of losses due to mortality, reduced performance, surveillance, replacement costs, loss of working hours and indirect losses due to rinderpest. It is too early to calculate benefits of rinderpest control, since the disease has not yet been eradicated.

Expenditure on surveillance and control is calculated from the budgetary provisions and special subventions for Veterinary Services at Federal, State and Local Government levels. The composition of herds is taken from the survey of herd structure by Pullan and Synge (8), while prices of animals are based on the quarterly market survey conducted by the Federal Livestock Department. Physical losses are based on calculations made by McCauley (3).

**SOCIO-ECONOMIC ASPECTS**

The calamity that befell the Fulanis provided an opportunity for social, political and religious workers to offer help and obtain favours in return. Some rich persons and butchers bought animals cheap, while inoculators benefitted themselves by offering vaccination services, etc. Over 4 million Nigerians derive a livelihood from tending cattle. Some Fulanis who became bankrupt gave up their trade and migrated to towns and cities in search of something more promising. Migratory pastoralism is not a profit-oriented trade but a family business. There is no pasture development because the Fulanis do not have titles to grazing lands. Moreover, pastures are shrinking in area due to reclamation of land for crop farming, industrial projects, housing estates, schools, offices, secretariats and roads. In addition, the economic predicament of the country forced State Governments to re-introduce a cattle tax (Jangali tax). After the drought of 1983, the rinderpest outbreak raises the question of a change to intensive systems of cattle husbandry (4). The magnitude of losses due to rinderpest, complicating diseases and drought in low-yielding herds are such that it will take considerable time, money and hard labour to restore the cattle industry.
### TABLE II
*Estimation of losses due to recurrence of rinderpest in Nigeria (1980-84) (in naira)*

#### A. DIRECT LOSSES

1. **Mortality** (total deaths 451,279)
   - (a) calves below 1 year (19%) at 250 naira: 21,435,750
   - (b) heifers between 1-3 years (9%) at 500 naira: 20,307,500
   - (c) bulls between 1-3 years (7%) at 300 naira: 9,476,700
   - (d) cows over 3 years (45%) at 800 naira: 162,460,000
   - (e) bulls and castrates over 3 years (20%) at 1,000 naira: 90,255,000
   - **Sub-total**: 303,994,950

2. **Infection** (total infected 1.95 m)
   - (a) abortions: 19,500,000
   - (b) weight loss: 39,000,000
   - (c) loss of milk: 19,500,000
   - (d) reduced vitality: 30,000,000
   - (e) reduced reproductive performance: 30,000,000
   - (f) loss of wildlife: 269,800
   - **Sub-total**: 138,269,800

3. **Surveillance**
   - (a) expenditure on «keeping out» (quarantine): 21,000,000
   - (b) expenditure on «stamping out» (vaccination): 45,000,000
   - (c) expenditure on investigation and diagnosis: 19,000,000
   - (d) administrative expenditure: 12,000,000
   - **Sub-total**: 97,000,000

4. **Loss of working hours**
   - (i) cattle owners: 40,000,000
   - (ii) administrators: 10,000,000
   - (iii) veterinary services: 40,000,000
   - **Sub-total**: 90,000,000

5. **Replacement costs**
   - Herd replacement costs: 303,994,950
   - **Sub-total**: 303,994,950

**TOTAL**: 933,259,700

#### B. INDIRECT LOSSES (population of national herd 12.0 m)

1. Reduced value of Nigerian cattle: 240,000,000
2. Poor quality meat: 40,000,000
3. Import of milk, meat, etc.: 200,000,000
4. Added expenditure on surveillance, which otherwise would have been saved: 97,000,000
   - **Sub-total**: 577,000,000

**GRAND TOTAL**: 1,510,259,700

**Note**: Basis of calculations: Pullan and Synge (1978), McCauley (1976) and Oluokun and David-West (1981). Naira 1 = 1.33 dollar.
DISCUSSION

The benefits of rinderpest control in Nigeria estimated by Felton and Ellis (2) are lost with the return of rinderpest in pandemic form, confounding earlier epidemiological forecasts based on the serological survey carried out by Taylor and Ojeh (9). With widespread epizootics occurring over a period of time, the assessment of losses due to rinderpest made by Oluokun and David-West (7) on the basis of 14 sporadic outbreaks in Sokoto State in 1980 would certainly need revision.

The effects of rinderpest coupled with complicating diseases and drought are far-reaching. The damage caused to the cattle industry has had no parallel in this century. The price of freedom is eternal vigilance (1), and when border control is ineffective, against the background of migratory pastoralism, spread of diseases is unavoidable. Moreover the present strain of rinderpest virus is noted for its contagiousness (5).

Expenditure on control and prevention of the disease in the country is inadequate compared with the heavy losses it has caused. The value of cattle industry in Nigeria is over ten billion naira. The estimated loss of 1.5 billion naira is too large to be ignored. While efforts are being made to eradicate the disease, large-scale programmes of rehabilitation of the industry by adopting intensive systems offer the only hope of a bright future for both the Fulanis and their cattle.

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L'IMPACT SOCIO-ÉCONOMIQUE DE LA PESTE BOVINE AU NIGÉRIA. —
D.R. Nawathe et A.G. Lamorde.

Résumé : Depuis sa résurgence en septembre 1980 et surtout pendant la grande épizootie de 1983-1984, la peste bovine a tué près d'un demi-million de bovins au Nigéria. En outre, la santé d'un million et demi d'animaux ayant survécu à la maladie a été gravement affectée. Les pertes causées par la peste bovine ont été aggravées par des maladies intercurrentes et par la sécheresse qui a sévi dans le pays en 1983. Le montant des pertes a été estimé à 1,5 milliard de naira (2 milliards de dollars US). De nombreux éleveurs se sont trouvés privés de ressources après avoir perdu tous leurs animaux du fait de la maladie ou après les avoir vendus à bas prix pour éviter une ruine complète. Beaucoup d'entre eux ont dû renoncer à leur activité. Tout développement de l'élevage et toute émancipation économique des éleveurs sont impossibles aussi longtemps que ce fléau continuera à infliger de lourdes pertes économiques.
EL IMPACTO SOCIOECONÓMICO DE LA PESTE BOVINA EN NIGERIA. —
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Resumen: Desde su reactivación en Septiembre de 1980 y principalmente durante la gran epizootia de 1983-1984, la peste bovina mató a casi medio millón de bovinos en Nigeria. Quedó gravemente afectada además la salud de un millón y medio de animales que sobrevivieron a la enfermedad. Las pérdidas causadas por la peste bovina se han agravado por enfermedades intercurrentes y por la sequía que azotó el país en 1983. Se ha estimado el importe de las pérdidas en 1.500 millones de naira (2.000 millones de dólares US). Muchos ganaderos han quedado privados de recursos después de perder todos los animales por la enfermedad o de venderlos a bajo precio para evitar la ruina completa, habiendo tenido que renunciar a su actividad muchos de los mismos. Mientras que este azote siga infligiendo onerosas pérdidas económicas será imposible cualquier fomento ganadero y cualquier emancipación económica de los ganaderos.

** REFERENCES