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Epidemiology of contagious bovine pleuropneumonia (CBPP) in Northern states of Nigeria. An update

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NWANTA (J.N.), UMOH (J.U.). Épidémiologie de la péripneumonie contagieuse bovine dans les États du nord du Nigeria. Mise à jour. *Revue Élev. Méd. vét. Pays trop.*, 1992, **45** (1) : 17-20

La présente étude porte sur une période de 20 ans (1970 à 1989). Elle confronte, année par année, les données concernant l'apparition d'épidémies de péripneumonie contagieuse bovine et la vaccination contre cette maladie, afin de déterminer la corrélation entre la vaccination et le nombre d'épidémies enregistré au Nigeria. Les résultats montrent que lorsque la vaccination a été intensifiée, de 1975 à 1986, les cas étaient moins nombreux. Le nombre de troupeaux atteints et le nombre total d'animaux morts enregistrés dans les troupeaux était en augmentation à la fin des années 80. Les données concernant la répartition saisonnière des épidémies révèlent qu'elle survient principalement au cours de la saison sèche (octobre à mars). Lorsque les données concernant la répartition géographique étaient inscrites sur une carte, selon les renseignements livrés par les fichiers sur les épidémies, il apparaissait qu'elles étaient principalement localisées au bord des cours d'eau. En outre, la morbidité des pays avoisinants était corrélée aux problèmes épidémiologiques du Nigeria. *Mots clés* : Bovin - Péripneumonie contagieuse bovine - Vaccination - Enquête pathologique - Épidémiologie - Nigeria.

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Introduction

Contagious bovine pleuropneumonia (CBPP) is caused by *Mycoplasma mycoides* var. *mycoides* (15) and is characterised by marked oedema of interstitial tissues in the lung, diffuse pneumonia and serofibrinous pleuritis (1). It plagued cattle in Europe and elsewhere in the 19th century as well as in Africa at the present time (1, 4, 6, 22).

Contagious bovine pleuropneumonia has occurred in Northern Nigeria for many years, causing generally high morbidity and mortality. Annual reports show a fluctuating number of outbreaks from time to time especially among the trade cattle (1, 12, 22).

The results of efforts to control CBPP are fluctuating. Reports show that the disease was controlled by 1965, but unfortunately it re-emerged (16). An attempt towards a regional international campaign for eradication of CBPP in West and Central Africa started in 1969. Nigeria launched the joint project (JP28) in 1974, although the actual campaign started in 1971 (6). When vaccination increased, the number of outbreaks decreased. At present, there is an upsurge of the disease across the country. The aim of this short communication is to reveal the outbreak pattern, the relationship between outbreaks and vaccination coverage, seasonal distribution pattern and geographical location of the outbreak in relation to the disease situation in the frontier countries.

Materials and Methods

Data on CBPP outbreaks and vaccination figures in Nigeria for a twenty-year period (1970-1989) were collected from disease outbreak report files in Epidemiology, and National Rinderpest/CBPP co-ordination Units of the Federal Livestock Department, Kaduna. They were plotted against the respective years to determine the relationship between vaccination campaign and incidence of CBPP in Nigeria. Data on monthly outbreaks for Kaduna, Kano and Sokoto from 1984-1986, were also collected from the same source and monthly variation for the reported outbreaks determined using the ratio-to-moving average method (13).

Other data collected include general outbreaks information in ten Northern states between 1985 and 1989.

Finally, information on CBPP situation in the neighbouring countries with respect to their control policies and results were collected with relationship to our control problems.

Results

Table I shows that the number of outbreaks is increasing since 1986. The number of doses of vaccine used is decreasing. The relationship between the vaccination campaign and the number of outbreaks is shown in figure 1. When the vaccination was intensified between 1975 and 1986, the number of outbreaks was low. Also on the increase in late 1980s were the number of affected herds and the total number of deaths recorded in the affected herds.

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TABLE I CBPP outbreaks and campaign situation in Nigeria, 1970-1989.

Year	No. of outbreaks	No. of animals in the affected herds	Total death record in the affected herds	Mortality (%)	Vaccination figures
1970	38	3 385	534	15.8	326 392
1971	89	4 830	700	14.5	1 448 288
1972	111	14 718	3 000	20.4	2 602 212
1973	47	14 139	2 237	15.8	2 500 672
1974	71	8 434	725	8.6	3 014 601
1975	35	5 392	303	5.6	2 911 246
1976	35	3 868	—	—	3 485 013
1977	15	—	—	—	2 200 000
1978	23	7 260	608	9.8	4 542 566
1979	15	1 570	177	11.2	5 246 988
1980	28	2 612	309	11.8	6 236 888
1981	11	1 454	77	5.3	5 900 000
1982	36	4 735	415	8.7	6 083 475
1983	13	1 025	133	13.0	4 065 710
1984	28	1 875	204	10.9	3 641 122
1985	25	2 386	255	10.7	4 916 682
1986	46	6 293	343	5.5	6 897 793
1987	49	5 133	559	10.9	4 980 474
1988	64	5 584	531	9.5	3 747 587
1989	125	10 871	812	7.5	2 986 825

Source : National Rinderpest/CBPP control programme, Annual Report on Field Activities (1984 ; 1989), Federal Department of Livestock and pest control services, Kaduna, Nigeria.

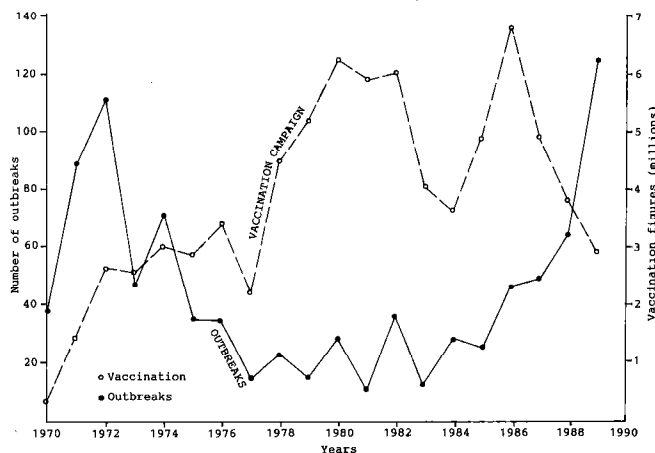


Fig. 1 : The relationship between vaccination campaign and incidence of CBPP in Nigeria (1970-1989).

Analysis of three-year data from Kaduna, Kano and Sokoto on a monthly basis revealed that most of the outbreaks occurred between October and March (table II). Time series decomposition of the data revealed a similar pattern (fig. 2).

TABLE II Summary of monthly reported CBPP outbreaks in Kaduna, Kano and Sokoto, 1984-1986.

Month	1984 No. of outbreaks	1985 No. of outbreaks	1986 No. of outbreaks	Total Monthly outbreaks
January	3	1	6	10
February	4	4	1	9
March	2	3	—	5
April	1	—	2	3
May	1	—	—	1
June	—	1	—	1
July	1	—	3	4
August	—	—	1	1
September	—	—	6	6
October	3	1	1	5
November	1	5	6	12
December	4	1	2	7

Source : National Rinderpest/CBPP control programme, Annual Report on Field Activities (1984, 1986), Federal Department of Livestock and pest control services, Kaduna, Nigeria.

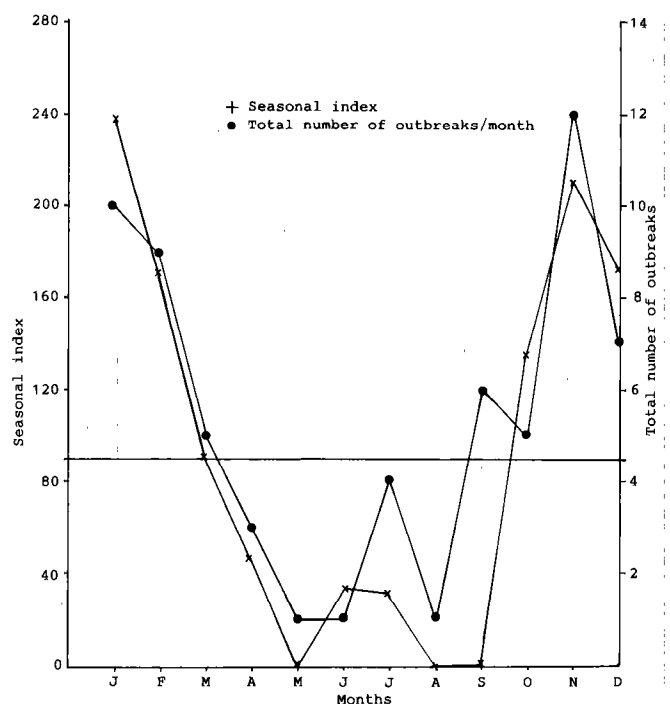


Fig. 2 : Seasonal distribution of CBPP outbreaks in Kaduna, Kano and Sokoto States, 1984-1986.

When outbreaks between 1985 and 1989 were plotted in a map using the map references indicated in the outbreak files, it was observed that outbreaks tended to concentrate along river banks. Highly noticeable was the concentration of cases along river Benue in the Gongola State, river Sokoto, river Niger and river Hadeija (map 1). These sites also happen to be dry-season grazing grounds.

The control policies in the studied frontier countries (Cameroon, Niger and Chad) were similar to those of Nigeria, but the results obtained varied. In Cameroon, though the situation was improved, it still remains precarious due to limited national resources and infiltration of "lungers" from endemic neighbouring countries; while Niger recorded another outbreak in 1990 after six years of freedom from the disease, Chad has not reported any outbreak of the disease since 1988 (8, 9).

Discussion

Results of the vaccination campaign and the outbreaks observed in this study further strengthen the view that intensified efforts towards effective vaccination contribute to lowering CBPP outbreaks (1, 4, 7, 21). The pattern of the graph (fig. 1) is an indication of the achievements of JP28, but unfortunately the rhythm of vaccination appeared to decline towards the late 1980s.

This may be due to an inadequate availability of CBPP vaccine or to the fact that herdsmen refused vaccination of their cattle for fear of either adverse post-vaccinal reactions or cattle tax (4).

The results of monthly variation and time series decomposition agreed with the reports of other scientists (1, 5, 12, 22) according to which the period of the largest number of outbreaks corresponded to the time of the greatest cattle concentration towards the rivers for dry-season grazing and watering. The close contacts among healthy and carrier animals along these river for banks probably enhanced the transmission of the infection.

Conclusion

The variation in the outbreaks from state to state agreed with the reports of DAVID-WEST (7) and ANISULOWO (4) according to which the extent of outbreaks of CBPP within a particular location depends on the availability of adequate and effective control measures or reporting efficiency in that area. But the outbreaks recorded may not reflect the actual situation of the disease as many cases may not have been reported. Therefore there is need to intensify efforts towards cattle movement across borders as well as vaccination in order to control the increase in the number of outbreaks. To reach a large number of animals, vaccination could be carried out along river banks and other dry-season grazing areas during the dry season.

Acknowledgements

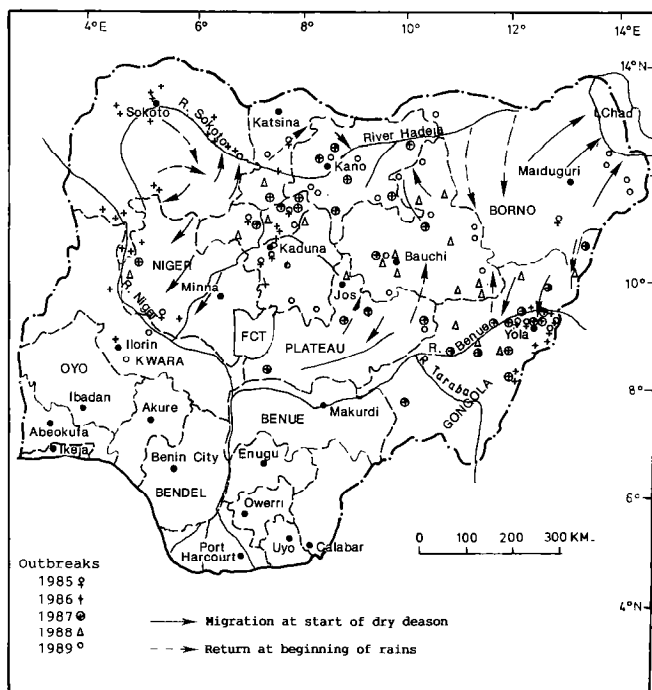
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Data on reported outbreaks of contagious bovine pleuropneumonia (CBPP) and vaccination figures for a 20-year period (1970-1989) are plotted against the respective years to determine the relationship between the vaccination and number of outbreaks recorded in Nigeria. The result indicates that when vaccination was intensified between 1975 and 1986, the number of outbreaks were low. The number of affected herds and the total number of deaths recorded increased in the late 1980s. Data on the seasonal distribution of outbreaks showed that they mostly occurred during the dry season (October-March). When data collected on geographical locations were plotted in a map using the same references indicated in the outbreak files, it was observed that they tended to concentrate along river banks. Also, the disease situation in the neighbouring countries was related to our own control problems. **Key words :** Cattle - Contagious bovine pleuropneumonia - Vaccination - Pathological survey - Epidemiology - Nigeria.

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Map 1 : Nigeria. Location of CBPP outbreaks recorded in Northern Nigeria between 1985 and 1989, and dry season cattle migration to grazing grounds (OKONKWO, 1984).

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