









Prevalence and risk factors promoting the onset of Newcastle disease in local poultry farming in north of Togo

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Introduction

Monthly distribution of Newcastle disease

- Newcastle disease is a highly contagious viral disease of poultry with significant economic consequences
- In Togo, it has been reported by almost all traditional chicken farmers as a pathology decimating their flocks, and therefore represents a major factor in food insecurity.
- Each year, it decimates high proportion of the poultry population in traditional environments, making it one of the priority diseases under surveillance in Togo.
- This study was conducted to determine the prevalence and identify factors promoting the occurrence the dissemination and persistence of Newcastle disease in the Kara and Savannah regions of Togo

Material and methods

Study area



Agro-ecological zone of the dry savannah : lowland zone with Sudanese climate. Precipitation : between May and October, 1000 -1100 mm per year with 82 days of rain Temperature : 22 to 35°C, Relative Humidity: 56%

Agro-ecological zone of Atakora : mountainous zone with a Sudano-Guinean climate. Precipitation: 1100 - 1400 mm with a normal of 113 days of rainfall. Temperature: 21°C to 34°C,

- The disease is present year-round with peaks from November to March, which represent the dry season, the period when the disease spreads rapidly and has a high impact (Dzogbema et al., 2021; Nwanta et al., 2008).
- Wind speed and dust are factors that favour the transport and spread of the virus during this period. Also, these periods coincide with intense commercial activities of poultry and movement of the latter.



Figure 3 : Monthly distribution of Newcastle disease in north of Togo

Main risks factors

- Structure of henhouses or shelters.
- Inappropriate management of morbid and dead animals
 - Incineration : 2.4%
 - Incineration; throw : 2.6%

Relative Humidity: 63%.

Figure 1: Study area

Sample size

- Sample Size (E) = $[Z1-\alpha/2^2P(1-P)]/d^2$ (Charan and Kantharia, 2013)
- Estimated prevalence (P) = 57% Grundler et al. (1988).
- $Z1-\alpha/2 = 1,962$; $d^2 = 5\%$; E = 378 households; blood samples : 1552 (4 per household)

Data collection

- Characteristics of the flock and rearing practices (rearing method, health monitoring, feed)
- Serological sampling according to the Alders and Spradbrow (2000) method.
- Geographical coordinates (GPS)

Analysis

- The hemagglutination inhibition test was performed on the serological samples to determine seroprevalence ((OIE, 2018; Terregino and Capua, 2013)
- Prevalence (P) = Positive samples (n) / Total number of samples (N)
- IC (Confidence Interval) = $P \pm Z1 \alpha/2x\sigma$ with $\sigma = \sqrt{[p(1-p)/n]}$.

Results and discussion

Prevalence of Newcastle disease



 Agroecological zone of Atakora has a higher prevalence than the agroecological zone of the Dry Savannah area $(37.35 \pm 3.72 \text{ vs } 31.02 \pm 1.02 \text{ sc})$ 3.08) The two large livestock markets and many commercial activities are carried out in the prefecture of Bassar, Binah and Kozah. These markets attract a lot of foreign traders. Also, poultry traders make many movements in the supply and marketing of poultry in the localities of the prefecture and also in the border localities of Benin. The transport animal in cages and the most common means of transport are motorcycles, followed by cabs There are also herds of cattle everywhere in this prefecture, accompanied by cattle egrets

- Incineration; burying : 2.6%
- Consumption : 9.3%
- Throw : 20.9%
- Burying: 56.6%
- Consumption, throw : 1.9%
- Consumption, burying : 1.9%
- Burying, throw : 1.9%
- Insufficient measure of sanitary prophylaxis.
- Purchase and sale of poultry
- Animal species in possession : 76.7% keep different animals species of different age at the same barnyard ((hens, guinea fowl, ducks, pigeons, turkeys, goats, sheep)
- Breeding method.(free range farming)

Clinical signs

Depression and prostration (98%), greenish diarrhea (86%), motor incoordination (83%), stiff necks and drooping wings (81%). Other symptoms of the disease have also been reported, although with lower incidence: rales (23%), swelling around the eyes (19%) and edema of the head (4%).



A B C



- The Kéran prefecture is host to a large reserve of wild animals
- In Togo circulates a velogenic strain of the virus.

Figure 2: Map of the prevalence of Newcastle disease in northern Togo.

Figure 4: Some clinical signs encountered (A) prostration (B) Diarrhea and stiff neck (C) drooping wings

Conclusion

- The disease is unevenly distributed in the different prefectures due to climatic factors, various human economic activities linked to hens marketing, movements of poultry, and insufficient vaccination practices.
- Despite the control measures implemented at the national level, Newcastle disease is still at a relatively high level. It is therefore crucial to strengthen and implement effective control and control management measures

References

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