EFFECTS OF VACCINATION ON THE PREVALENCE OF PESTE DES PETITS RUMINANTS (PPR) IN SMALL RUMINANTS IN DUTSI-MA LOCAL GOVERNMENT AREA, KATSINA STATE, NIGERIA

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ABSTRACT
An investigation was conducted to determine the prevalence of Peste Des Petits Ruminants (PPR) andvaccination efforts inDutsinma Local Government Area, of Katsina State, Nigeria using data collected from Dutsinma Veterinary clinic between 2001to2019. The results showed that thedisease is most prevalent during the cold months of the year (Harmattan) and beginning of the rainy season.Similarly, outbreaks increased with the relaxation of vaccination campaign programmes. It was also observed that thenumber of outbreak was low when Tissue-Culture-Rinderpest Vaccine (TCRV) vaccination was intensifiedand outbreak increases when the vaccination was relaxed. This study was concluded that intensive vaccinationcampaign of small ruminants against the PPRshould be done on house to house basses before harmattan set in and trainingoffield workers and mass enlightenment campaign in the villages are important to control the threat of the diseasein Dutsin-Ma .

Keywords: Vaccination, Peste Des Petits Ruminants, small ruminants, Dutsinma , Katsina State.

INTRODUCTION

Small ruminants are the main farm animals owned by the poor in developing countries including Nigeria.These animals arereared as sources of milk and meat for family consumption and as income that can easily be mobilized for paying household expenditures, particularly in difficult situations [Bukar *et al*. 2020, FAO & OIE, 2018]. An effort to improve the productivity of small ruminants in Nigeria has being hinderedby a variety of factors including infectious diseases that resultin the countless number of animal deaths [El-Yuguda *et al.* 2010; Emikpe & Akpavie, 2011; Ularamu *et al.*, 2012].Among this diseases is peste des petits ruminants (PPR) which is reported to be endemic in Nigeria withoutbreaks occurring regularly in small ruminantsthroughout Nigeria [Ularamu *et al.*, 2012**]**Peste des petits ruminants (PPR} is a highly contagious viral disease of sheep and goats[Mai *et al*., 2014]. TheWorld Organization for Animal Health has identified PPR as a remarkable and economicallyimportant worldwide viral disease of small ruminants associated with high morbidity and mortality [FAO & OIE, 2018]. This particular disease had a course of per acute, acute or may be chronic and its fatality rate may be very high.Clinically, manifestations of this disease include severe pyrexia, oculo-nasal discharges, necrotizing and erosive stomatitis, enteritis, and pneumonia. PPR is a member of morbillivirus genus of paramyxoviridae family.In Nigeria,PPR has continued to be a major diseaseof small ruminants causing sporadic outbreaks among susceptible sheep and goats. During the course ofoutbreak, villages are known to lose almost the whole populations of their small ruminants.PPR is an economically important diseaseconsidering the fact that it affects small ruminants, which arefound practically in almost every household in Nigeria. These small ruminants contribute significantly to the protein consumption in the country providing about46% of the quantity ofmeat consumed in the country [Bukar *et al*. 2020].Therefore; this explains why the Dutsin-Ma Local Government has intensified effort in the control of the disease by vaccination using Tissue-Culture-Rinderpest-Vaccine (TCRV) which has been found to give solid protection against PPR for over one year.

The aim of the study was to determine the prevalence of PPR in Dutsin-Ma local Government Area of Katsina State vis-a- vis the control measures using TCRV and to recommend on how best to control the disease.

MATERIALS AND METHOD

A PPR vaccination and outbreak record was collected from Dutsin-Ma Veterinary for the period of nineteen (19) years (2001 to 2019). The vaccine used on the small ruminants was Tissue culture rinderpest vaccine (TCRV), a heterlogous live attenuated viral vaccine prepared from the National veterinary Research Institute (NVRI), Vom, Plateau state Nigeria, in which 1ml dose were administered to the small ruminant which confers a solid immunity against PPR for at least one year. Therefore, the vaccination exercise was reported annually. The prevalence of the disease and the relationships between vaccination campaign and outbreak of PPR in Dutsin-Ma were determined. Similarly, monthly reported outbreaks was also determined using the Ratio-to Moving average method or Time Series Analysis in which the data was recorded month by month for the entire period of the study. The data was therefore summarized to be represented by 12 months and extraneous variations were eliminated such that against each month is the seasonal index for that month. It was the seasonal index that was plotted against the months (x-axis) to obtain a plot that shows seasonal index of the PPR.

RESULTS

The result showed an increase in the number ofsheep and goats vaccinated in the year 2001, 2011, 2016,2013, 2017 and 2019 while vaccination decreases from2003,2006,2007, 2014. *(Fig.* 1) The period from 2001 to 2019 wascharacterized by a fluctuation in the number ofanimals vaccinated. While the number of animalsvaccinated was highest in 2011,the highest outbreak was in 2007 and 2014.The relationship between the vaccinationfigures and the number of outbreak is shown in[*Fig.* 1].When the vaccination campaign wasintensified in 2015, the number of outbreakswas low. A summary of monthly outbreaks of PPRfrom 2001 to 2019 revealedthat most of theoutbreaks occurred in January, March, May andJune*as* observed usingthe seasonal index *(Fig.* 2).

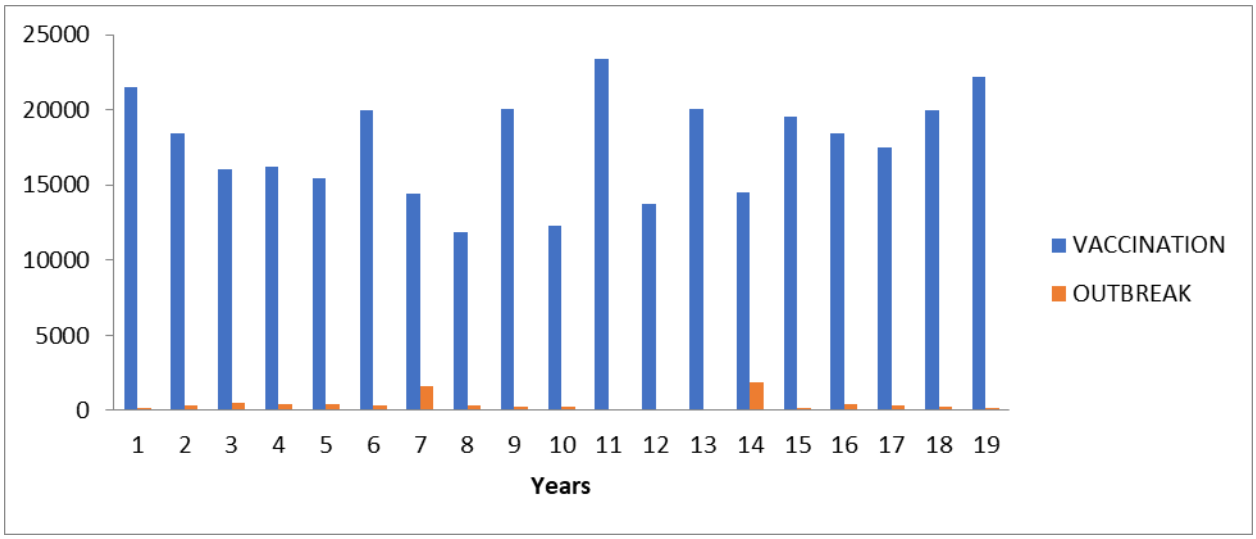

Fig. 1.: Vaccination/Outbreak of PPR in Sheep and Goat in Dutsima LGA from 2001 to 2019

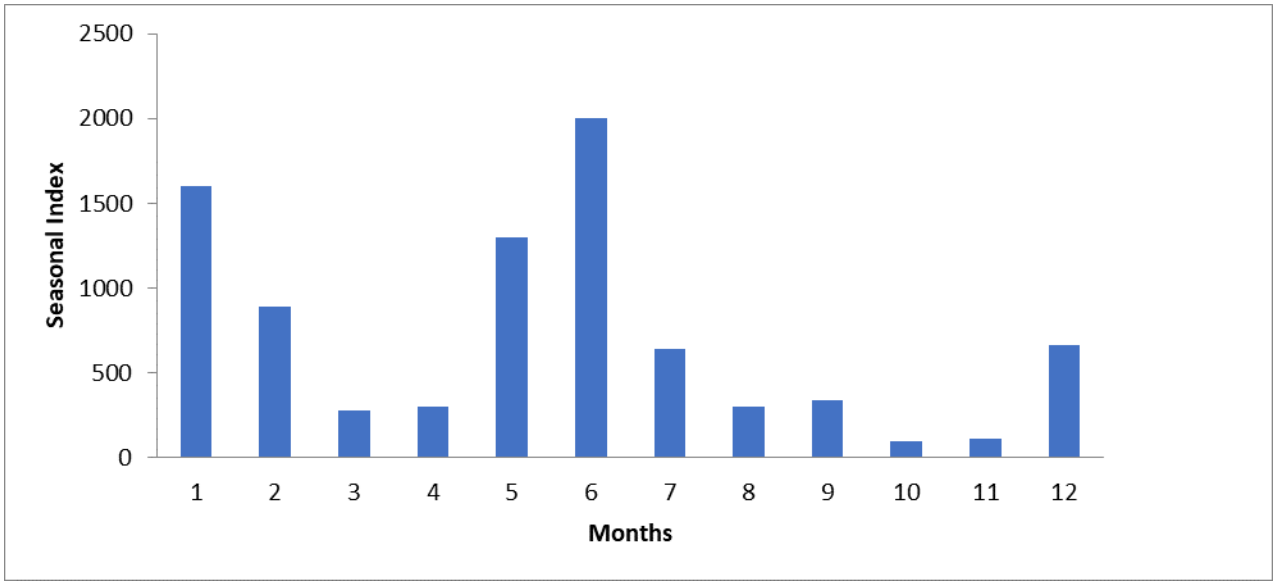

Fig 2 *Monthly distribution of PPR outbreaks in small ruminants in Dutsin-Ma, Katsina State of Nigeria (2001-2019)*

DISCUSSION

PPR seems to occur throughout the year, there is a definite indication of seasonality in its natural occurrence in Dutsin-Ma environs (Figure 2). The incidences were higher in June due to the poor nutrition by this period contribute to the spread of the disease. The dry season period of March, April, May and June (pre raining season). This is in consonance with the report by Ularamu et al.(2012). These periods in the study are very important to the small ruminant due to scarcity of feed and water. Therefore, animals roam about in search for feed and water and gather at few available water ponds, as such, predisposing them to PPR due to the fast spread of the virus.It is possible that the outbreak recorded in DutsinMma Local Government Veterinary Clinic may not have reflected the actual situation in the Local Government as many cases may go unreported. The effective vaccination against PPR is the major advances in the control of this disease. A decrease number of outbreak could have been as a result of the increase launching of vaccination campaign against PPR in this year's which perhaps was effectively carried out due to enthusiasm by both the farmers and vaccination campaign personal. The rhythm of vaccination in all the villages in Dutsin-Ma from 2001 to 2019 has an undulating pattern (Fig1) . This may have been dueto insufficient vaccines to cover the entire stocks in the villages, the fear of adverse effect of the vaccines and the one day allotted for each village could not be enough to cover all the available stock. Due to free range system of grazing by small ruminants and poor record keeping, actual situation and information on the disease and vaccination coverage might have been reported..

CONCLUSION

It is concluded from this study that TCRV is aneffective controlagainst PPR and outbreak of the disease are encountered almost all year round (Fig2). With the occurrence of the diseasebeing higher from Harmattan and pre-raining seasons especially when vaccination exercise is relaxed. (Fig 1) It is important to employ early vaccination program exercises prior to the beggening of hammattan season and raining season. .

RECOMMENDATION

It is a collective responsibility of the international community, just as they united to eradicate Rinderpest to dosame forPPR. . PPR eradication is within our reach but it requires the political will and financial support by Federal government, private sector, regional organizations and international resource partners in order to have a sustainable commitment.

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