

“The Lumpy Skin Disease Burden In The Cattle Of Anakapalli District, Andhra Pradesh”

Dr. Arjuna Apparao Adari^{1*},

^{1*}Asst. Professor in Zoology, SGA Govt. Degree College, Yellamanchili, Anakapalli(Dt)

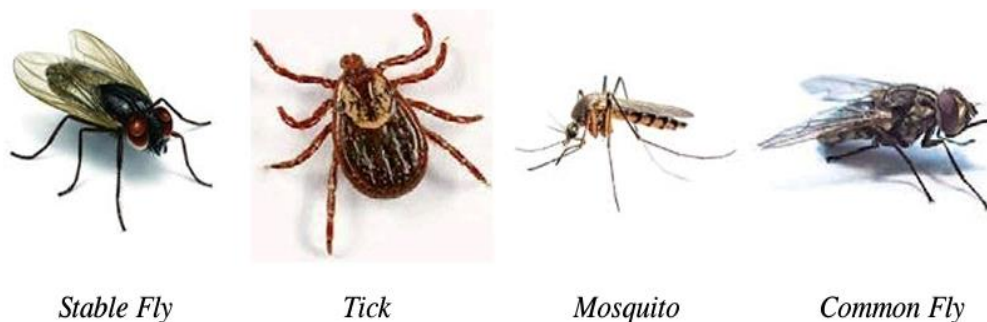
ABSTRACT:

Survey on the Lumpy skin Disease in the Anakapalli District of Andhra Pradesh conducted in the period of 2022 October to 2023 September. Results are shown below

RESULTS AND DISCUSSION

From the present study and the data generated it is inferred from the survey that the estimates of percentage of animals which are suffering from LSD is 20.18 % in the Anakapalli District. In winter season 62 cows in 248 cows. So the prevalence rate in winter of this period is 25% (62/248). In summer season 36 positive cases were obtained in 229 animals. So the prevalence rate of the disease in the summer season of the study period is 15.72 % (36/229). The same in the case of the rainy season the positive cases are 51 among the 261 animals. So the prevalence rate in the rainy season of the study period is 19.5 % (51/261). Highest no. of positive cases were recorded in winter season which corresponds to months between October 2022 to January 2023.

Moderate cases were recorded in the rainy season which corresponds the months between June 2023 to September 2023. And low number of cases was identified in the summer season which corresponds the months between February 2023 to January 2023. Different types of diseases are wide spread among the cattle of Anakapalli District in different seasons. Among them the Lumpy Skin Disease, Babesiosis, Theileriosis, Foot and Mouth Disease, Haemorrhagic septicaemia, Bacillus anthrax are the wide spread diseases. These diseases hamper the growth of the livestock sector and impose serious constraints on the health and productivity of domesticated cattle in tropical and sub-tropical regions of the world. So, It is very essential to have complete knowledge of this parasite prevalent in the area for developing an effective control measures and mass vaccination strategy. (Morris 1931) and it was restricted to sub-Saharan Africa until 1989 and later transboundary spread of the disease to the Middle East Asia (Israel) was observed (House et.al. 1990). In 2019, the LSD outbreak was reported for the first time in Bangladesh, India, China, and also re-emerged in Israel (Calistri et.al. 2020). The disease might have emerged in India from its neighboring countries (Kumar et.al. 2020) and is posing many outbreaks in the bovine population throughout the country. The occurrence of the disease was being observed from the year 2019 and was scientifically reported in the year 2020 (Kumar et.al. 2020; Sudhakar et.al. 2020). The disease is causing severe economic losses to the farmers in the present pandemic scenario directly in terms of loss of productivity, reduced milk production, temporary or permanent sterility in bulls, and loss of condition of hides and indirectly in terms of trade restrictions, costs of laboratory diagnosis, supportive treatment, disinfection of premises, and vaccination. The major route of transmission of the disease is by biting flies and ticks (Ali and Obeid 1977; Lubinga et.al. 2013a, 2013b; Lubinga 2014; Tuppurainen et.al. 2013a, 2013b). The first outbreak of LSDV in Israel in 1989 was thought to be due to the movement of infected *Stomoxys* Lumpy Skin Disease is caused by the lumpy skin disease virus (LSDV) that belongs to the genus *Capripox* virus and Family *Poxviridae*. The disease was first observed in Zambia in the year 1931 (Morris 1931) and it was restricted to sub-Saharan Africa until 1989 and later transboundary spread of the disease to the Middle East Asia (Israel) was observed (House et al. 1990). In 2019 the LSD outbreak was reported for the first time in Bangladesh, India, China and also re-emerged in Israel (Calistri et al. 2020) The disease might have emerged in India from its neighbouring countries (Kumar et.al. 2020) and is posing many outbreaks in the bovine population throughout the country. The occurrence of the disease was being observed from the year 2019 and was scientifically reported in the year 2020 (Kumar et al. 2020; Sudhakar et al. 2020) The major route of transmission of the disease is by biting flies and ticks (Ali and Obeid 1977; Lybinga et.al 2013a, 2013b; Lubinga 2014; Tuppurainen et al. 2013a, 2013b). The first outbreak of LSDV in Israel in 1989 was thought to be due to the movement of infected *Stomoxys calcitrans* from Egypt (Yeruham et al. 1995). Similarly, the risk of introduction of LSDV through *Stomoxys calcitrans* that were present in animal transport trucks was observed by Saegerman et al. 2018.



Objectives :

1. The main purpose of the study is to detect the prevalence of the Lumpy Skin Disease in the cows of the district Anakapalli in various mandal.
2. To study the seasonal incidence in various seasons.
3. The use of the vaccine supplied by the co operatives.

Causative organism:

Lumpy skin disease (LSD) is a viral infection caused by the lumpy skin disease virus (LSDV) of the capripox virus genus in the poxviridae family. LSD virus is identical to sheep pox virus (SPV), and goat pox viruses (GPV) which are closely related although differ phyto-genetically. LSD virus is also known as Neethling virus.

Vectors:

Animal biting insects like Ticks and mosquitoes have been suspected as mechanical vectors for this disease. Some ticks are acted as biologically transmitted vectors of this virus. Because the disease can be experimentally transmitted by infected saliva, contact infection is another potential route of infection.

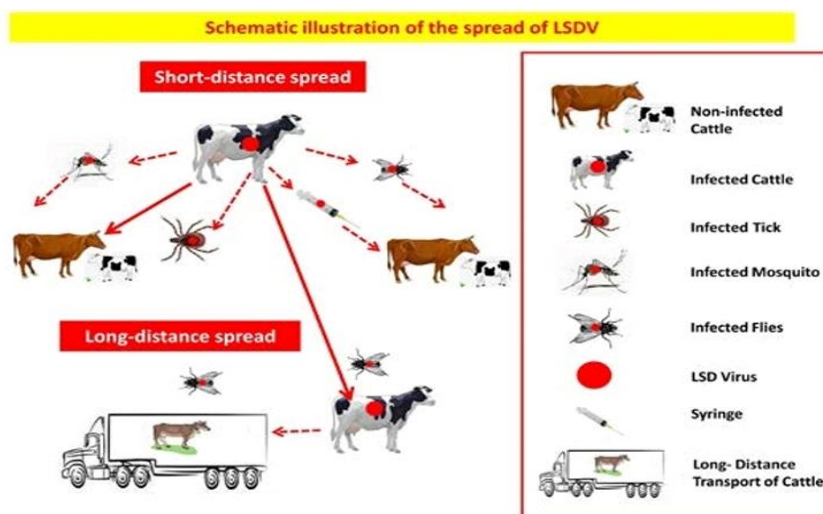
Symptoms:

Lumpy skin disease is a viral disease that affects cattle. It is transmitted by blood-feeding insects, such as certain species of flies and mosquitoes, or ticks. The incubation period is 4–14 days. It causes fever, lacrimation, nasal discharge, and hypersalivation, followed by the characteristic eruptions on the skin nodules on the skin and can also lead to death. Lumpy skin disease can lead to significant economic losses.

Morbidity is 5%–50%; mortality is usually low. The greatest loss is due to reduced milk yield, loss of condition, and rejection or reduced value of the hide

Transmission

With the unrestricted movement of stray animals the virus transmission will occur. Through the saliva, nasal and ocular discharges of the infected animals the virus will be transmitted.



Source: Tuppurainen, E., Alexandrov, T. and Beltrán-Alcrudo, D. 2017. Lumpy skin disease field manual – A manual for veterinarians. FAO Animal Production and Health Manual No. 20. Rome. Food and Agriculture Organization of the United Nations (FAO).

It can remain in saliva for 11 days (after the development of fever). The virus can be found in skin nodules even after 33 days of infection. • The virus primarily transmitted by arthropod vectors like common biting flies (*Stomoxys* and *Biomjia*), mosquitoes (*Aedes* and *Culex*) and some ticks (*Rhipicephalus appendiculatus* and *Amblyomma hebraeum*) are mainly responsible for its spread. The multiplication of vectors during the monsoon months causes faster spread of the disease.

The virus also persists in the semen of infected bulls, so natural mating and artificial insemination can also spread the disease. Thus, it is advisable to use bulls after 22 days of intervals for mating.

LSDV remains viable in infected tissue of animals for around 120 days, for 35 days in dried crust and 18 days in hides at the farm.

FACTORS AFFECTING THE TRANSMISSION OF VIRUS:

The transmission of the virus associated with the humid climate conditions which will be favorable to the development of the vector population.

Rural cattle markets where purchasing and selling of animals is being carried out by the farmers is another risk factor. At these markets, animals mix freely without effective biosecurity controls and purchased livestock results in the regular and frequent entry of new animals to the villages. • All breeds and stages of the animals, as well as both sexes, are susceptible to the LSD. Other factor responsible for disease spreads are environment, management, common water sources, sex and age of the livestock.

VACCINATION:

Pox vaccination provides immunity up to two to three years; however there is need of experiment for the validating the immunity period of post vaccination in the cattle. Due to some safety reasons and for preventive measures, the manufacturers of vaccine suggest annual vaccinations of the animals

Therapeutic measures

There is no prescribed medicine for LSD. However; symptomatic treatment of infected animals may be done to prevent secondary bacterial infections. Affected animals can be managed/ cured with commercially available antipyretics like *vetalgin*, *meloxicam*, *ketoprofen*, etc. However, if fever persists or the animal shows nasal discharge, antibiotics like *ceftiofur*, *enrofloxacin*, *sulphonamides*, *dicyclicin* can be administered to check secondary infection. Administration of anti-inflammatory and anti-histamine preparation may also be considered in severe cases. Application of anti-allergic and antiseptic ointments with fly-repellent properties can also be used on nodules as advice by the veterinarian. Affected animals can be treated at the farm itself;

Economic Losses:

The outbreak of the Lumpy skin disease posed severe, broad and longterm effects on the livestock industries. The impact of the disease on the livestock and the farmers can be assessed quickly, but it is very difficult to quantify it in the paucity of accurate data. The expenses of an animal disease outbreak can roughly be divided into direct loss, which includes loss of milk, reproductive failure, treatment cost and preventive cost (vaccination, sanitization, vector control etc.). However, indirect losses encompass labor costs, disposal cost, transportation costs, damage to hide, reduction in selling value and reduction in drought power.

Impact of the disease on the Poor farmers of the district:

Production losses LSD outbreaks not only affect the microeconomics but also the macroeconomics. Loss of milk production is a major recurring loss in any disease which impacts the microeconomics of the farm.

Due to the LSD outbreak state had witnessed about 15-20 percent loss in milk production. The milk production has decreased considerably and is not going to improve soon. Most of the infected cows were recovered in usual manner, although reduction in milk yield in lactating cows had been seen for several weeks. In a study it has found that about 35 percent of farm has loss 1 to 3 liters of milk per day per animal due to LSD outbreak. The economic loss due to loss of milk production per affected cow during entire course of LSD was estimated to be INR 8898.31. the production will remain low for the coming 2-3 years as affected animals will not reproduce. Taking into account the official data (Press Trust of India, 2022), the overall economic loss due to LSD was estimated to be INR 18337.76 crores (USD 2217.26 million) at national level.

.Mortality There are several poor people who rear 2-3 bovines to earn their living and many such farmers have suffered huge losses due to the death of their cattle. In Punjab, the morbidity rate was usually up to 50% and mortality rate around 1-5% was observed.

MATERIALS AND METHODS

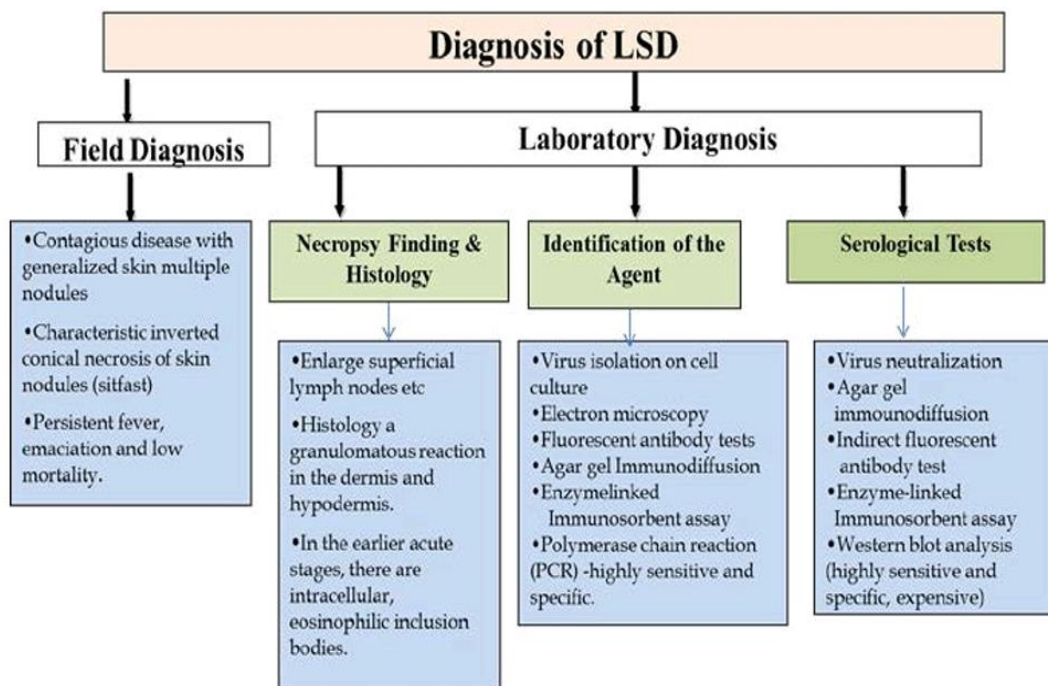
STUDY AREA:

Anakapalli is one of the north eastern coastal districts of Andhra Pradesh and it lies between 17°69'N and 83°00'E on the banks of the river Sarada. It is bounded on the north by the allure sitaramaraju District, Kakinada district in the west, The Bay of Bengal in the south and vizianagaram and Visakhapatnam districts in the east.



April to June are the warmest months. The temperature gets down with the onset of South West monsoon and tumbles to a mean minimum of 18.8 degrees Celsius by December after which there is a reverse trend till the temperature reaches mean maximum of 37.4 degree Celsius by the end of May. The district receives annual rainfall of 1202 mm, which are contributed to by the South West and North East Monsoon. The rest is shared by summer showers and winter rains.

Fig:1 The diagnostic procedures for lumpy skin disease



Sources: K. A. Al-Salihi, (2014). Lumpy Skin disease: Review of literature. MRSVA. 3 (3), 6-23.

Study Methodology:

A total of 738 cows in the district were examined for the disease from 12 mandals of the district randomly for a period of a year between October 2022 to September 2023, for the preparation of the data of the disease incidence.

The animals are examined for the disease with the help of the Veterinary Doctors and Field staff of the Visakha Diary.

Data Analysis:

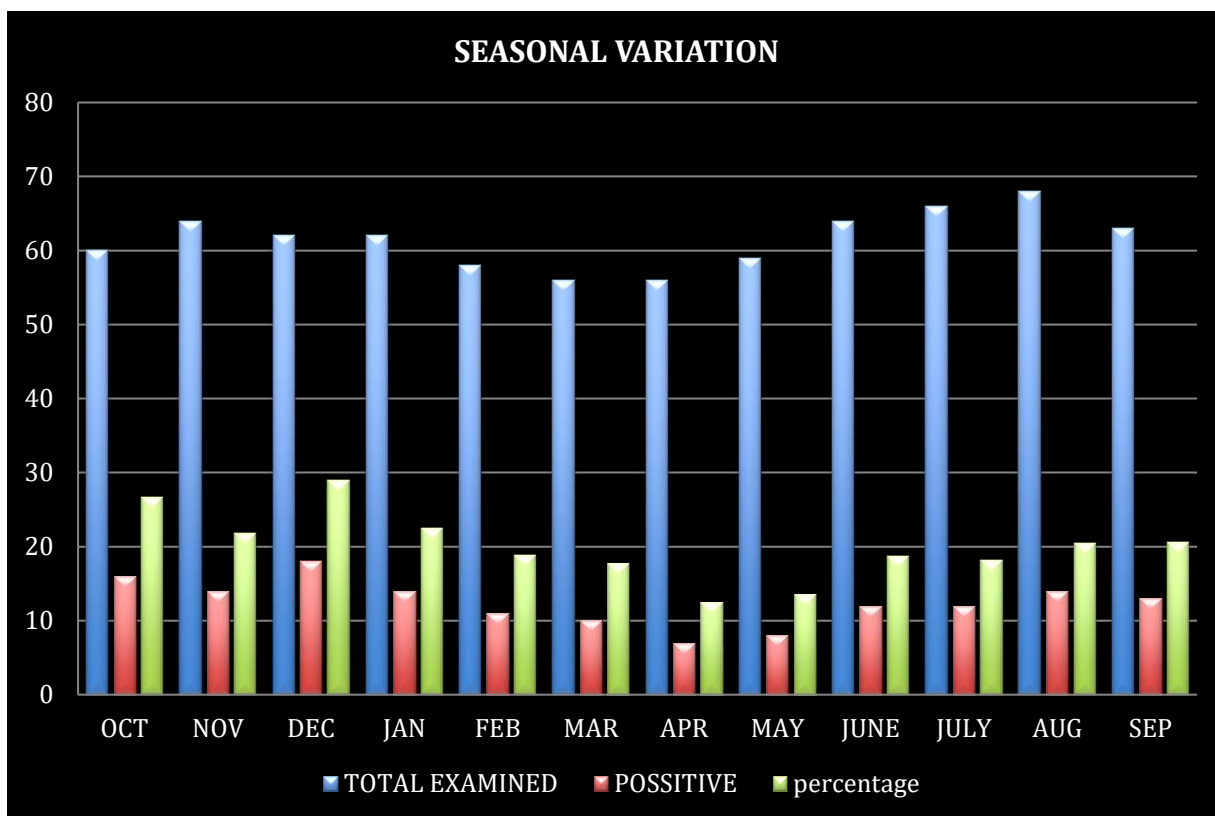
The raw data and result obtained from Identification of the disease was recorded in the format and entered in to Microsoft excel spread sheet. Prevalence of affected animals out of total animals examined.

Result:

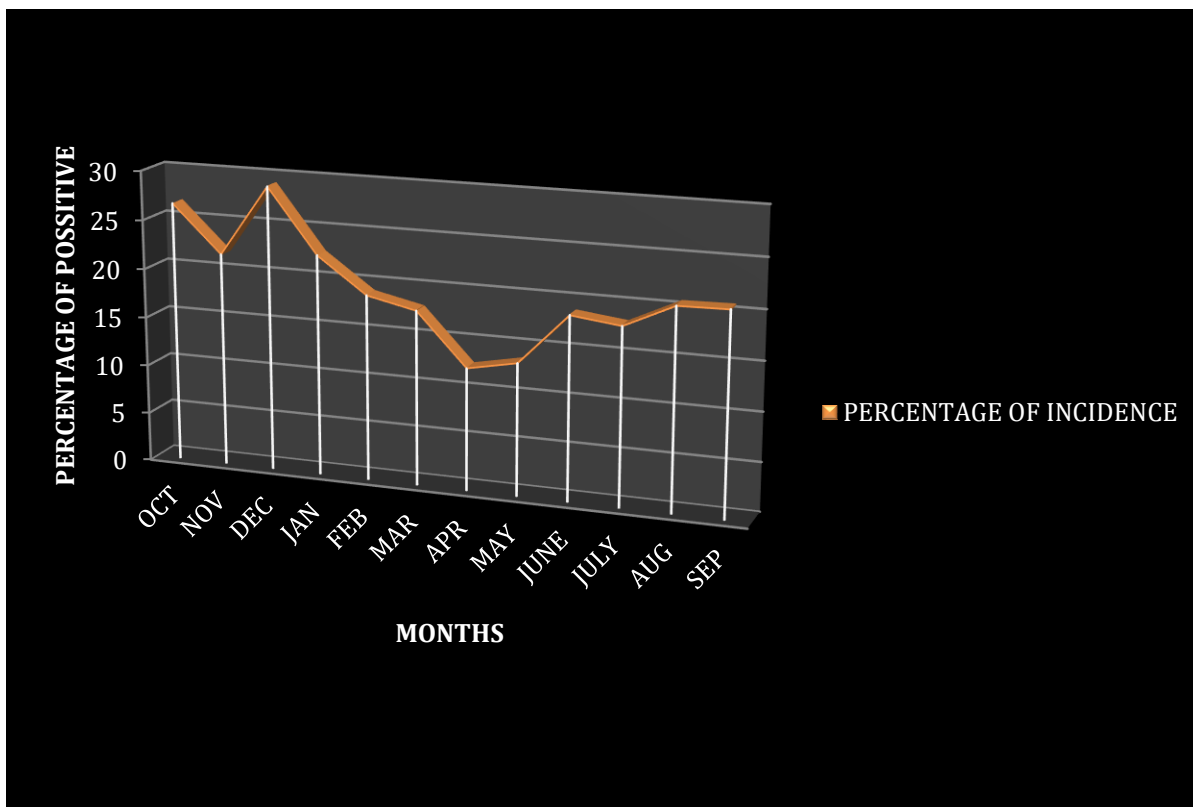
A total of 738 cows were examined and tested for the LSD disease and an overall prevalence of 20.18 % (149/738) LSD was recorded in the study area. The highest percentage of LSD positive cases were recorded in Sabbavaram (29%), followed by Narsipatnam (26.6%), and Anakapalli(22.5%) while the lowest prevalence was recorded in Yellamanchili (12.5 %). Kasimkota(13.5%) and Natavaram (17.8%) mandals are also have lowest prevalence. (Table 1)

REVELENCE AND SEASONAL VARIATION OF LSD IN VARIOUS MANDALS & VARIOUS SEASONS IN ANAKAPALLI DISTRICT

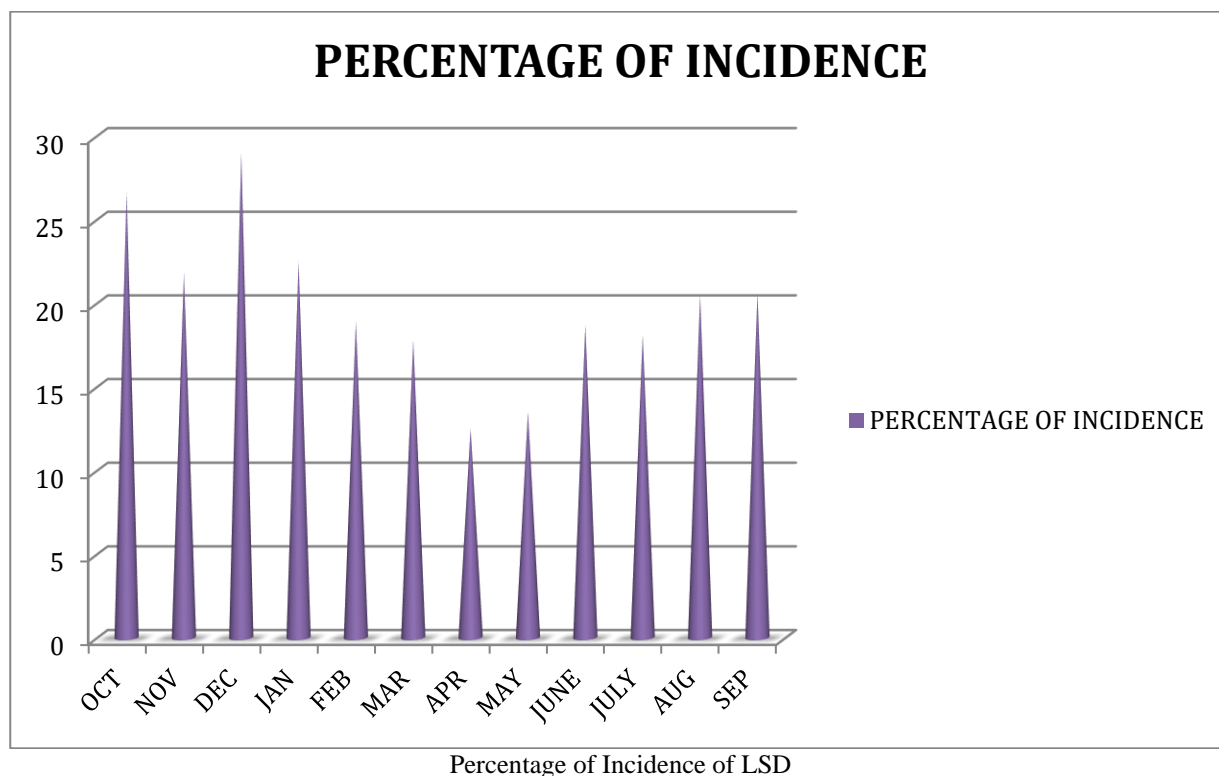
SL.NO	MONTH	MANDAL	NO. OF ANIMALS CHECKED FOR LSD	NO. OF POSITIVE CASES	PERCENTAGE OF POSITIVE CASES
1	October 2022	Narsipatnam	60	16	26.6
2	November 2022	Makavarapalem	64	14	21.8
3	December 2022	Sabbavaram	62	18	29
4	January 2023	Anakapalli	62	14	22.5
WINTER SEASON			248	62	25
5	February 2023	S.Rayavaram	58	11	18.9
6	March 2023	Natavaram	56	10	17.8
7	April 2023	Yellamanchili	56	7	12.5
8	May 2023	Kasimkota	59	8	13.5
SUMMER SEASON			229	36	15.72
9	June 2023	Golugonda	64	12	18.7
10	July 2023	Atchyutapuram	66	12	18.1
11	August 2023	Nakkapalli	68	14	20.5
12	September 2023	Chodavaram	63	13	20.6
RAINY SEASON			261	51	19.5
GRAND TOTAL			738	149	20.18 %



Bar Diagram showing the Seasonal Variation of the Incidence of LSD



:Graph showing the month wise LSD positive cases



According to the examination of the disease the prevalence rate of the Lumpy Skin Disease in the district is at about 20.18 % from October 2022 to September 2023.

In this study period we have examined 738 cows. In that cows 149 cows are suffered from LSD. We have examined all these cows and tested for the susceptibility of LSD for the period of one year from 01-10-2022 to 31-12-2023. detailed data of the 738 cows is mentioned in the Tables below.

RESULTS AND DISCUSSION

From the present study and the data generated it is inferred from the survey that the estimates of percentage of animals which are suffering from LSD is 20.18 % in the Anakapalli District. In winter season 62 cows in 248 cows. So the prevalence rate in winter of this period is 25% (62/248).

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CONCLUSION

The Lumpy Skin Disease wide spreading disease in India in the recent period. There is a huge loss for the poor farmers of India because of this malign. According to the study it is observed that in the winter season it is spreading widely than in summer as because of the vector population is very high in the winter season. So, There is a necessity in the winter season to take some necessary activities to control the problem. At present the goat fox vaccine is utilizing by the authorities to stop the spread of the disease. Systematic vaccination strategy, culling of the diseased animals, maintenance LSD diagnosis points in the public animal markets were the best methods to stop the wide spread of the disease. There is a need for further investigation using modern serological and molecular techniques for the complete epidemiological picture of LSD and other vector diseases in Anakapalli district.

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ACKNOWLEDGEMENTS:

My sincere acknowledgement to my family members i.e. my wife Dhanalakshmi, My son Leela Krishnadithya, My beloved daughter Brahmani for their support, with out which I am unable to do this work.