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Case Control Study of Lumpy Skin Disease (LSD)

China

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Stepwise Approach

- Background Investigate
- Case Defination
- Control Defination
- Find Potential Risk Factors
- Make Questionnaire
- Evaluate Loss
- Study Size

Background Investigate

- Revisit the site to review the epidemiological situation of LSD reported during 2019 to August of 2021.
- Record the clinical signs (local vet's record or households' description).
- Check the test report.
- Analysis the potential risk factors for LSD introduction and spread.

Case Defination

Household level case definition:

1. Cattle or buffaloes seen with high fever, loss of appetite, lacrimation, nasal discharge, mouth ulcers and many 1-5cm nodules on their skin during 2019 to August of 2021
2. Many animals seen abovementioned signs at the same time

Controls Defination

1. No LSD cases in the herd
2. In the same village with case, or a neighbouring village (if same village is not possible)
3. Same period with case
4. Farmers are willing to participate
5. Randomly chosen from above list

Potential Risk Factors

1. Purchase cattle (or buffaloes, sheep, goats)
2. Communal grazing
3. Close to a case herd
4. Share equipments with other households
5. Purchase feed
6. Purchase semen or mating with a bull from another farm

Questionnaire

Stakeholder involved: Household farmers, Local Veterinarian (if possible), Village heads

Lumpy Skin Disease Outbreak Investigation Questionnaire

September of 2021

Village name (belong to province):

Date of visit:

Household farm name:

Local Vet's name:

Village head name:

Village head questionnaire

1. Total livestock population in the village. Cattle: Buffaloes: Sheep:
Goats:
2. Number of household farms:
3. When was the LSD outbreak:
4. Number of household farms were affected:
5. When was the last case seen?

Local veterinarian questionnaire (if possible)

1. How many cattle/buffaloes were vaccinated against LSD?
2. How was LSD confirmed?
3. What was the symptoms of the first case?
4. Is there a detailed case record?
5. How many animals were affected and dead in the village?
6. How were infected animals treated?
7. Were any samples sent to a laboratory in time?

Household farm questionnaire

1. Did you ever have LSD in your farm? If yes, when did it happen?
2. Total number of animals in your farm. Cattle: Buffaloes: Sheep: Goats:
3. How many animals were affected?
4. Did you vaccinate cattle/buffaloes against LSD?
5. Did you buy any livestock in 5 weeks before LSD breakout?
If yes, how many, what animals, from where

6. Did you buy any cattle/buffaloes feeds in 6 weeks before LSD breakout?

If yes, from where

7. Were there any LSD cases in the surrounding farms?

8. Did you share any equipment with the case farm?

9. Did you use communal grazing?

If yes, when

10. Did you mate your cattle/buffaloes with a bull from another farm in 6 weeks before LSD breakout?

11. Did you buy semen to mate in 6 weeks before LSD breakout?

If yes, from where

12. Did you control insects?

13. How many animals were dead due to LSD?

14. How did you deal with the affected animals?

15. Can you estimate your loss?

Source and transmission

Potential carriers of LSDV	Transmission route	Transmission distance (within or between villages)
Infected animals	Purchase of LSD-infected animal	Within or Between
Contaminated feed or water	Purchase of contaminated feed; Share feeding or watering equipment with an infected farm; Communal grazing ;	Within or Between
Blood-feeding insects	LSDV-carrying insects fly or are transferred (track or people) from an infected neighbor farm	Within
Semen	Contaminated semen; Bull are from an infected farm	Within or Between

Evaluation

1. Cattle or buffaloes lose weight and lose performance
2. Cattle infertility, abortion, milk production decreased
3. Cowhide hollow, low utilization rate

Study Size

Case number	Control number
43 HH	12 HH

Odds Ratio Calculation

	Case HH			Control HH		
Risk factors	Postive	Negtive	Total	Postive	Negtive	Total
Purchase of livestocks within 6 weeks before breakout						
Purchase of feeds within 6 weeks before breakout						
Share equimpment with positive HH						
Communal grazing within 6 weeks before breakout						
Mating within 6 weeks before breakout						
Vaccination						
Control insects						

Summary

- Lumpy skin disease can cause significant morbidity and economic loss.
- Neverland have 1 million Farming households, which often do not have a good biosecurity prevention.
- LSD was first found in 2019 and show an increasing trend.
- Our team visited the outbreak fields to review potential risk factors.
- LSD might be spread by infected animals, contaminated feed, insects or semen.
- We investigated 43 case farms and 12 control farms.
- Real risk factors could be figure out.